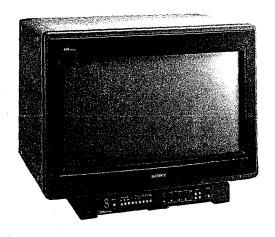
# SONY

TRINITRON® COLOR VIDEO MONITOR

# BVM-2811 BVM-3011 BVM-3011P



BVM-2811 Chassis No. SCC-G09A-A BVM-3011 Chassis No. SCC-G08A-A BVM-3011P Chassis No. SCC-G10A-A



OPERATION AND MAINTENANCE MANUAL 1st Edition

Serial No. 2000001 and Higher (BVM-2811)

Serial No. 2000001 and Higher (BVM-3011)

Serial No. 2000001 and Higher (BVM-3011P)

# WARNING

#### For the customers in the USA

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

#### For the customers in Canada

This apparatus complies with the Class A limits for radio noise emissions set out in Radio Interference Regulations.

#### Pour les utilisateurs au Canada

Cet appareil est conforme aux normes Classe A pour bruits radioélectriques, spécifiés dans le Règlement sur le brouillage radioélectrique.

#### **SAFETY-RELATED COMPONENT WARNING!!**

COMPONENTS IDENTIFIED BY SHADING AND MARK ! ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS ANDINTHE PARTSLIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

#### **CAUTION!!**

DO NOT USE THE EXTERNAL DEGAUSSER TO DEMAGNETIZE THE SCREEN.
BE SURE TO USE THE DEGAUSS SWITCH ON THE FRONT PANEL.

この装置は、第一種情報装置(商工業地域において使用されるべき情報装置)で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会 (VCCI) 基準に適合しております。

従って、住宅地域またはその隣接した地域で使用すると、 ラジオ、テレビジョン受信機等に受信障害を与えることがあ ります。

取扱説明書に従って正しい取り扱いをしてください。

#### Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß der Farb-Videomonitor BVM-3011P in Übereinstimmung mit den Bestimmungen der BMPT-Amtsblatt Vfg 243/1991, 46/1992 und 89/1992 funkentstört ist. Der vorschriftsmäßige Betrieb mancher Geräte (z.B. Meßsender) kann allerdings gewissen Einschränkungen unterliegen. Beachten Sie deshalb die Hinweise in der Bedienungsanleitung. Dem Bundesamt für Zulassungen in der Telekommunikation wurde das inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Sony Deutschland GmbH Hugo Eckener Str 20 D-5000 Köln 30

#### ATTENTION AU COMPOSANT AYANT RAPPORT A LA SÉCURITÉ!!

LES COMPOSNATS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE! SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DESS SUPPLEMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DU CIRCUIT QUI SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT SONT INDETIFIÉS DANS CE MANUEL. SUIVRE LES PROCÉDURES QUAND LES COMPOSANTS CRITIQUES SONT REMPLACÉS OU LE FONCTIONNEMENT IMPROPRE EST SUSPECTÉ.

#### ATTENSION!!

NE PAS UTILISER DE DÉMAGNÉTISEUR EXTÉRITUR POUR DÉMAGNÉTISER L'ÉCRAN. UTILISER LA TOUCH DE DÉMAGNÉTISATION (DEGAUSS) SUR LA PANNEAU FRONTAL.

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# 第1章 取り扱い操作

#### 1-1. 概要

#### 1-1-1. 特長

本機は、放送局やビデオプロダクションなど、正確な画像再生が要求される場で真価を発揮する高性能カラービデオモニターです。

#### 高解像度ブラウン管

蛍光面ピッチ0.35mmのスーパーファインピッチトリニトロンブラウン管を採用。 中心部の解像度950TV本という高密度で鮮明なカラー画像が得られます。

#### 安定した色温度

内蔵のビームコントロール回路により、長期間にわたって安定した色温度が得られます。

#### 16:9ワイド画面

アスペクト比(縦横比)16:9のブラウン管を採用。今後増加が予想されるワイド画面 番組に対応できます。画像のアスペクト比は、16:9から4:3に切り換えも可能です。

#### 映像信号の確認が容易なスプリットスクリーン

画面の下半分を白黒で、上半分をカラーで見ることができます。両者を比較することにより、輝度信号系、色信号系の再現状態、ノイズの状態やカラーバランスなどが一目で確認できます。

#### ノイズ成分の監視に便利なブルーオンリーモード

3系統のコントロールグリッドをすべて青信号で動作させ、白黒画像として表示させることができます。飽和度(クロマ)や色相(フェーズ)の調整、VTRノイズの監視に便利なモードです。

#### 簡単で正確な調整ができるコンバージェンス調整方式

画面の15カ所でコンバージェンスが調整できるため、画面周辺部まで正確な調整が 簡単に行えます。

#### メニュー操作

ビデオモニターの各種機能や動作条件を、画面に表示されるメッセージに従って簡単に設定できます。

#### ランディングずれの補正

水平地磁気に対するブラウン管の向きの変化によって生じるランディングずれを、 ビームランディング補正回路により補正できますので、設置調整が簡単です。

#### その他の特長

- 別売りのプラグインタイプのデコーダー基板を装着することにより、3つのカラー方式 (NTSC、PAL、SECAM)に対応。
- モニターの基準黒レベルを入力信号の黒レベルに簡単に合わせられるピクチャーセットアップ機能。
- 水平、垂直同期信号を同時に監視できるパルスクロス機能。VITS (Vertical Interval Test Signal) の監視も可能。
- モニターのセットアップに便利なクロスハッチ信号と100%白色信号のジェネレー ターを内蔵。
- 別売りのVTTC (Vertical Interval Time Code) リーダー基板BKM-1460を装着することにより、VTTCの表示が可能。
- 別売りのオートセットアップアダプターBKM-2056を装着することにより、オートクロマ/フェーズ調整、オートホワイトバランス調整などが可能。
- 別売りの黒レベル発生基板BKM-1480を装着することにより、モニターの黒レベルの細かな設定が可能。
- コンバージェンス、ホワイトバランス、メニュー操作などの設定部は、前面下部 のドロアー内部に配置。
- 高性能くし型フィルターを装備。
- ●オートデガウス、マニュアルデガウス機能。
- 3種類のAFC時定数に対応。
- CRT保護回路を搭載。

#### 1-1-2. オプション

BVM-3011には、次のような別売り部品が用意されています。これらの部品を使用することによって、モニターの機能を拡張・変更することができます。

#### ご注意

別売り基板を装着するときは、必ず「1-4-7.モニター動作条件の設定」の「別売り 基板を指定するには」の記載に従って必要な設定を行ってください。設定を行わな いと装着した基板が正しく動作しない場合があります。

#### BKM-1410 NTSCアダプター(BC基板)〔標準装備〕:

NTSCカラー方式のデコーダー

#### BKM-1412 NTSCダイナミックくし型アダプター(BT基板)〔標準装備〕:

NTSCカラー方式用くし型フィルター

BKM-1420 PALアダプター(BD基板): PALカラー方式のデコーダー

**BKM-1421 PAL-Mアダプター(BM基板):** PAL-Mカラー方式のデコーダー

BKM-1422 PALくし型アダプター (BT基板): PALカラー方式用くし型フィルター

BKM-1430 SECAMアダプター (BE基板): SECAMカラー方式のデコーダー

#### BKM-1440 RGB/コンポーネントアダプター(BF基板):

RGBまたはコンポーネント信号のデコーダー出力

BKM-1460 VITCアダプター (BL基板): VITCの読み取りと画面表示

BKM-1470 セーフエリアディスプレイ(BQ基板): セーフエリアの画面表示

BKM-1480黒レベル信号発生器(BS基板): 黒レベル信号の出力

#### BKM-2053 オートセットアッププローブ:

オートセットアップアダプターBKM-2056によるオートセットアップ用

#### BKM-2056 オートセットアップアダプター(BN/BO/BP基板):

オートクロマ/フェーズ調整、オートホワイトバランス調整、色温度の選択

#### BKM-2085-20 デジタル4:2:2入力キット(BA3/BV基板):

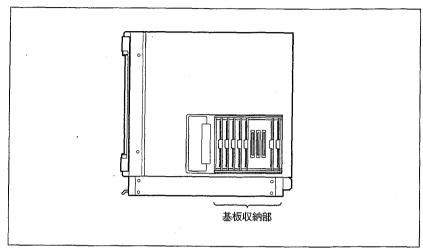
D-1デジタル信号の入力(シリアル入力BNC×2)

#### BKM-2090-20 D-2シリアル入力キット(BA3/BU基板):

D-2デジタル信号の入力(シリアル入力BNC×2)

#### 別売り基板の組み合わせについて

BVM-3011の右側面にある基板収納部のB1~B5には、前出の別売り基板から選択したB基板を装着することができます。



右側面図

B4とB5には、工場出荷時にそれぞれBT基板 (NTSCくし型アダプター)と、BC基板 (NTSCアダプター)が装着されています。基板によっては、特定の収納部にしか入れられないものがあります。次ページの表を参照して別売り基板を選択し、BT基板、BC基板と交換、または追加装着してください。

#### ご注意

- B1~B5以外の収納部には、収納部の名称に対応するB基板(BA、BG、BH、BI、BJ)が装着されています。これらの基板は移動・交換しないでください。・
- B5には、必ず基板を入れてください。B5が空になっていると、コンポジット信号モードのとき、輝度信号/色信号系(あるいは色信号系のみ)が正常に動作しません。

基板割り当て

		収納部				
基板名	機能	<b>B</b> 5	B4	Вз	B2	B1
BT (BKM-1412)	NTSCくし型フィルター	0	0	0	0	0
BT (BKM-1422)	PALくし型フィルター	0	0	0	0	0
BC (BKM-1410)	NTSCデコーダー	0	0	0	0	0
BD (BKM-1420)	PALデコーダー	0	0	0	0	
BE (BKM-1430)	SECAMデコーダー	0	0	0	Ö	0
BM (BKM-1421)	PAL-M デコーダー	0	0	0	0	. 0
BF (BKM-1440)	RGB/コンポーネント アダプター	×	×	0	×	×
BL (BKM-1460)	VITCリーダー	×	×	×	0	×
BQ (BKM-1470)	セーフエリア表示	×	Δ	×	0	×
BS (BKM-1480)	黒レベル信号発生	0	0	0	0	0
BN, BO, BP (BKM-2056)	オートセットアップ アダプター	0	0	×	×	×
BV, BA3 (BKM-2085-20)	4:2:2シリアルデジタル インターフェース	×	×	×	×	0
BU, BA3 (BKM-2090-20)	D-2シリアル インターフェース	×	×	×	×	. 0

- ○: 収納可
- X:収納不可
- △:収納可。ただしサブコントロールパネルのボタンによるコントロールは不可

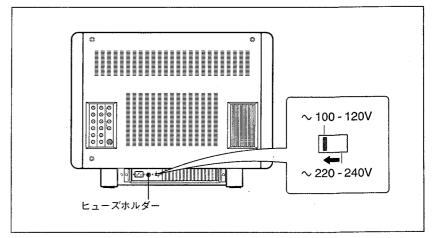
# ご注意

BD基板(PALデコーダー)とBM基板(PALMデコーダー)を同時に装着しないでくだ さい。モニターの誤動作の原因になります。

◆基板の装着について詳しくは、各基板に付属のオペレーション アンド メンテナンスマニュア ルを参照してください。

# 1-2. 入力電圧の設定

本機は、AC 100~120 Vの電圧で動作します。電源コードをコンセントに差し込む 前に、裏面の電圧切り換えスイッチが AC 100~120 Vになっていることをお確かめ ください。



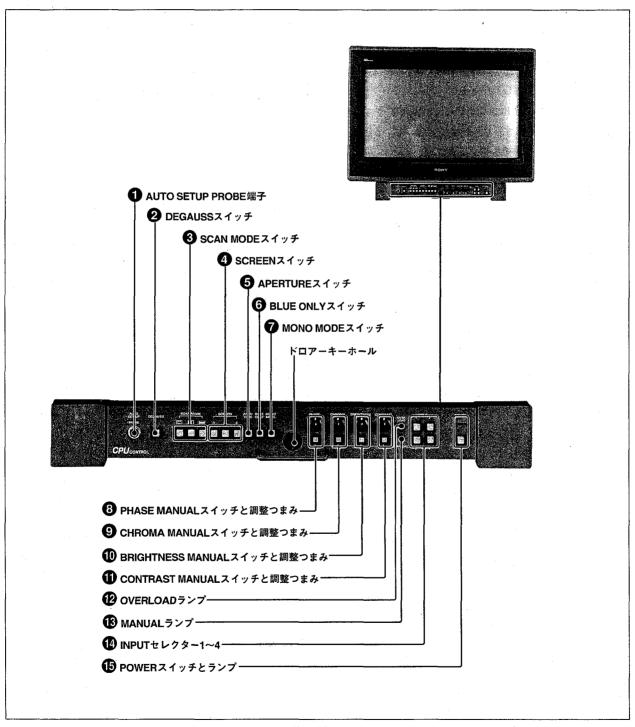
電圧切り換えスイッチ

# ヒューズについて

出荷時は、AC 100~120 V用の4A/125 Vヒューズを内蔵しています。

# 1-3. 各部の名称と働き

#### 1-3-1. 前面パネル



前面パネル

# **1** AUTO SETUP PROBE (オートセットアッププローブ) 端子

別売りのオートセットアップ用プローブBKM-2053を接続します。

#### 2 DEGAUSS (消磁)スイッチ

電源を入れるとオートデガウス回路が動作してCRTが消磁されます。

電源を入れたまま消磁したいときは、このスイッチを1回押します(押し続ける必要はありません)。消磁が終了すると、 自動的に回路が切れます。再度消磁するときは、5分以上間 隔をおいてからスイッチを押してください。

#### 3 SCAN MODE (スキャンモード)スイッチ

- □ (アンダースキャン):押し込むとアンダースキャン モードになります。画面サイズが約3%縮小され、ラス ターの四隅までが画面に表示されます。
- [■] (Hディレイ):押し込むと画像が水平方向に移動し、 画面の左から約¹/₄の位置に水平同期信号が現れます。
- (Vディレイ):押し込むと画像が垂直方向に移動し、 画面のほぼ中央に垂直同期信号が現れます。
- 通常のモードに戻すには、押し込まれているスイッチを もう一度押して元に戻します。
- ■ と の両方のスイッチを押し込むと、パルスクロス画像が表示されます。
- ■ または スイッチを押し込むと、画像の明るさ(輝度)が自動的に増加して、同期部分の監視が容易になります。

#### **4** SCREEN (スクリーン)スイッチ

それぞれ、R(赤)、G(縁)、B(青)のビームをON/OFFします。スイッチを押し込むとビームが切れ、もう一度押して元に戻すとビームが出ます。

#### **⑤** APERTURE (アパーチャー)スイッチ

このスイッチを押し込まないでおくと、フラットな周波数特性が得られます。

周波数特性を補正する場合は、このスイッチを押し込み、ドロアー内のAPERTURE調整ネジを調整します。ブースト周波数は、内部のBG基板にあるアパーチャーセレクター (S1)で4.5 MHzと6.5 MHzが選択できます。

S1が4.5MHzに設定されているときは、4.5MHzのブースト量を最大 6 dB 変化させ、 画像の輪郭を補正することができます。

S1が6.5MHzに設定されているときは、6.5MHzのブースト量を最大6dB変化させ、CRTのアパーチャーロスを補正することができます。

## 6 BLUE ONLY (ブルーオンリー)スイッチ

通常は押し込まないでおきます。押し込むと赤と緑の信号が カットされ、青信号のみが白黒画像として表示されます。 飽和度(クロマ)や色相(フェーズ)の調整や、VTRノイズの監 視が容易に行えます。

# **7** MONO MODE (モノモード)スイッチ

通常は押し込まないで使用します(AUTOモード)。カラーバーストの有無により、自動的にカラーモードと白黒モードが切り換わります。

強制的に白黒モードにしたいとき、このボタンを押し込みます (MONOモード)。

# 8 PHASE MANUAL (フェーズマニュアル)スイッチと調整 つまみ

このスイッチが押し込まれていないときは、PRESETSメニュー操作でプリセットしたフェーズ(色相)が得られます。フェーズを調整するときは、スイッチを押し込んでから、上の調整つまみを回します。

◆「1-4-3. 画像レベルのプリセット」を参照してください。

### ご注意

ドロアー内のSYSTEMボタンでSECAMシステムが選択されているとき(SECAMランプ点灯時)や、PALシステムが選択され(PALランプ点灯時)、かつPALDモードが選択されているとき(PAL S/SECAM F/COMB Sボタンのランプ消灯時)は、PHASE MANUAL調整つまみは機能しません。

# **9** CHROMA MANUAL (クロママニュアル)スイッチと調整 つまみ

このスイッチが押し込まれていないときは、PRESETSメニュー操作でプリセットしたクロマ(色の飽和度)が得られます。クロマを調整するときは、スイッチを押し込んでから、上の調整つまみを回します。

◆「1-4-3. 画像レベルのプリセット」を参照してください。

# BRIGHTNESS MANUAL (ブライトネスマニュアル)ス イッチと調整つまみ

このスイッチが押し込まれていないときは、PRESETSメニュー操作でプリセットした明るさ(黒レベル)が得られます。画面の明るさを調整するときは、スイッチを押し込んでから、上の調整つまみを回します。

◆「1-4-3. 画像レベルのプリセット」を参照してください。

# (1) CONTRAST MANUAL (コントラストマニュアル)スイッチと調整つまみ

このスイッチが押し込まれていないときは、PRESETSメニュー操作でプリセットしたコントラストが得られます。コントラストを調整するときは、スイッチを押し込んでから、上の調整つまみを回します。

◆ 「1-4-3、画像レベルのプリセット」を参照してください。

#### ② OVERLOAD (オーバーロード)ランプ

CRTがオーバードライブ状態になると、このランプが点灯して警告します。

#### (B) MANUAL (マニュアル)ランプ

MANUALスイッチ**3~①** のいずれかを押し込むと、このランプが点灯します。

#### 1 INPUT (入力)セレクター1~4

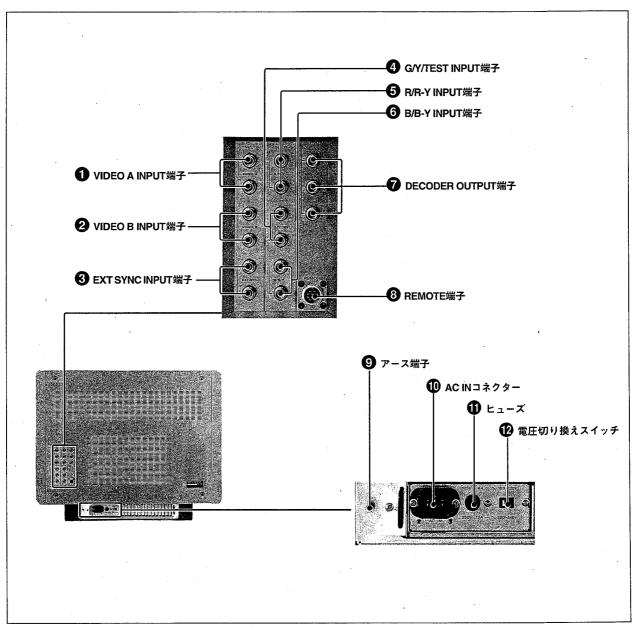
どれかひとつを押し込んで、モニターする入力信号を選択します。各セレクターで選択する入力信号の条件を、ドロアー内のCONFIGURATIONボタンでそれぞれに設定することができます。設定した条件は、INPUT CONFIGメニュー操作でメモリーすることも可能です。

◆ [1-4-2. 入力信号の条件設定] を参照してください。

#### 15 POWER (電源)スイッチとランプ

押し込むと電源が入り、ランプが点灯します。電源を切るときはもう一度押します。

#### 1-3-2. 後面パネル



裏面パネル

- **① VIDEO A INPUT (ビデオA入力)端子 (BNC型)**
- ② VIDEO B INPUT (ビデオB入力)端子 (BNC型)

コンポジットのビデオ信号を入力します。それぞれ一方の端子は入力用、もう一方の端子は入力信号のループスルー出力として使用できます。ループスルー出力を使用しない場合は、75Ω終端器を取り付けてください。

# 3 EXT SYNC INPUT(外部同期入力)端子 (BNC型)

外部同期信号を入力します。一方の端子は入力用、もう一方の端子は入力信号のループスルー出力として使用できます。 ループスルー出力を使用しない場合は、75Ω終端器を取り付けてください。

- 4 G/Y/TEST INPUT (G/Y/テスト入力)端子 (BNC型)
- **⑤** R/R-Y INPUT (R/R-Y入力)端子 (BNC型)
- ⑥ B/B-Y INPUT (B/B-Y入力)端子 (BNC型)

RGB信号、コンポーネント(Y、RY、BY)信号、またはテスト信号を入力します。入力信号の選択は、ドロアー内のFORMATボタンで行います。

それぞれ2つのコネクターのうち1つに信号を入力すると、 もう一方は入力信号のループスルー出力となります。ルー プスルー出力を使用しない場合は、75Ω終端器を取り付け てください。

# **7** DECODER OUTPUT (デコーダー出力)端子(BNC型)

RGB/コンポーネントアダプターBKM-1440を本機に装着してあるとき、モニター画面で見ている信号をRGB信号またはコンポーネント (Y、R-Y、B-Y) 信号にデコードして出力します。

RGB信号かコンポーネント信号のどちらで出力するかは、 BKM-1440内のBF基板のS1セレクターで選択します。RGB 信号を出力するときはS1セレクターを上側にセットし、コ ンポーネント信号を出力するときは下側にセットします。

#### ご注意

- RGB信号を入力信号として選択しているときは、 DECODER OUTPUT端子からのRGB信号は、正しい信号 になりません。RGB出力を使用したいときは、R、G、B の各入力端子のループスルー出力を使用してください。
- ◆ 入力信号がコンポジット信号以外のときは、DECODER OUTPUT端子からの出力にも同期信号が含まれていません。同期信号が必要な場合は、EXT SYNC INPUT端子のループスルー出力を使用してください。
- CHROMAつまみ、PHASEつまみ、APERTURE調整ネジ、およびMATRIXボタンの設定はDECODER OUTPUT 端子から出力される信号に影響します。
- DECODER OUTPUT端子からの出力信号には、カラーキ ラー回路は働きません。

#### 8 REMOTE (リモート)端子 (10ピン)

付属の10ピンコネクターを使って、外部コントロール機器を接続します。接続した機器から本機をリモートコントロールするときは、ドロアー内のLOCAL/REMOTEボタンを押して、ボタン左のREMOTEランプを点灯させます。

端子の入力モードおよびピンの割り当ては、REMOTEメニュー操作で変更することができます。

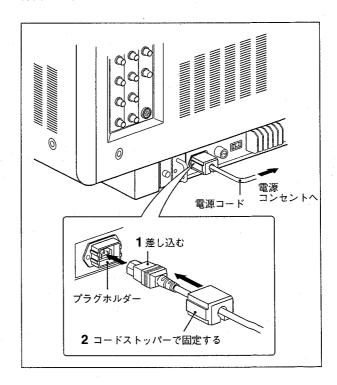
◆ [1-4-6.リモートコントロール機能の割り当て] を参照してください。

#### 9 アース端子

必要に応じてシステムをアースに接続します。

#### **1** AC IN (AC電源入力)コネクター

付属の電源コードでAC電源を接続します。



#### 10 ヒューズ

入力電圧がAC100~120Vのときは4Aヒューズ、220~240VのときはT2A ヒューズを使用します。

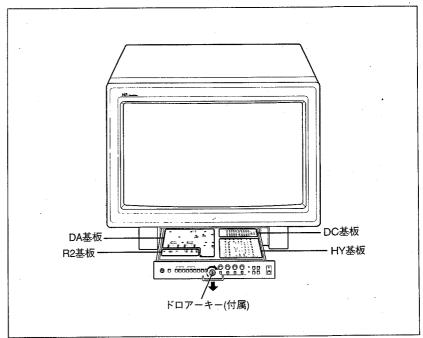
#### 12 電圧切り換えスイッチ

供給電源電圧に合わせてAC100~120Vまたは220~240Vに設 定します。

# 1-3-3、ドロアー内のサブコントロールパネル

付属のキーをドロアーキーホールに差し込んで右に 90°回し、 ドロアーを引き出し ます。内部にサブコントロールパネルがあります。

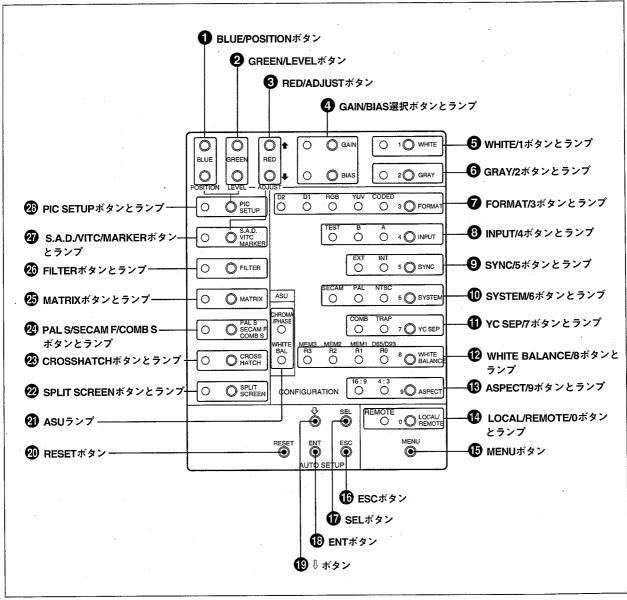
サブコントロールパネルのコントロール類の調整は、30分以上通電してモニターが 安定状態になってから行ってください。



サブコントロールパネル

DA基板、DC基板、R2基板の調整ネジを回すときは、付属のドライバーを使用して ください。

# HY基板 (コンフィギュレーション/メニュー/オートセットアップ部)



HY基板

#### **1** BLUE / POSITION (青/位置)ボタン

ホワイトバランス調整時(GAINまたはBIASランプ点灯時) は、青信号の調整に使用します。黒レベル調整時(PIC SETUPランプ点灯時)は、帯状の入力画像の黒色部が本機の 黒レベル部と隣接するように、入力画像の位置の調整に使用 します。

#### ② GREEN/LEVEL (緑/レベル)ボタン

ホワイトバランス調整時(GAINまたはBIASランプ点灯時) は、緑信号の調整に使用します。黒レベル調整時(PIC SETUPランプ点灯時)は、本機の黒レベルのブライトネスが 入力信号の黒色部と同一になるように調整します。

#### 3 RED/ADJUST (赤/調整)ボタン

ホワイトバランス調整時(GAINまたはBIASランプ点灯時)は、赤信号の調整に使用します。セーフエリアが表示されているとき(S.A.D./VITC/MARKERランプ点灯時)は、セーフエリアのサイズ調整に使用します。VITCが表示されているときは、VITCの表示の保持に使用します。

4 GAIN/BIAS (ゲイン/バイアス調整)選択ボタンとランプ ホワイトバランスの調整項目を選択します。押したボタンの 左のランプが点灯します。

BIAS: 暗部のホワイトバランスとブライトネスを調整する

GAIN: 明部のホワイトバランスとコントラストを調整する とき

調整には、BLUE/POSITION、GREEN/LEVEL、RED/ADJUSTボタンを使用します。

#### **⑤** WHITE/1 (100%白色)ボタン<sup>(1)</sup>とランプ

明部のホワイトバランスを調整するときや、ランディングずれの補正をするとき、このボタンを押します。ランプが点灯し、内部のジェネレーターが生成した100%白色信号が画面に表示されます。信号を消すときは、もう一度ボタンを押します。

#### 6 GRAY/2 (グレイ)ボタン<sup>1)</sup> とランプ

暗部のホワイトバランスを調整するとき、このボタンを押します。ランプが点灯し、内蔵のジェネレーターが生成したグレイ信号が画面に表示されます。信号を消すときは、もう一度ボタンを押します。

#### **7** FORMAT/3 (フォーマット選択)ボタン¹¹ とランプ

モニターする入力信号のフォーマットを選択します。ボタン を押し、対応するフォーマットのランプを点灯させます。

**CODED:** デコーダー基板(BC、BD、BE、BM)を取り付けて

NTSC、PAL、SECAM信号をモニターするとき

YUV: コンポーネント信号(Y/R-Y/B-Y)をモニターするとき

RGB: RGB信号をモニターするとき

**D1:** D1フォーマットのコンポーネント信号をモニターする とき (BKM-2085-20装着時のみ有効)

**D2:** D2フォーマットのコンポジット信号をモニターすると き (BKM-2090-20装着時のみ有効)

#### **③ INPUT/4 (入力選択)ボタン<sup>1)</sup>とランプ**

コンポジット信号をモニターするとき、信号の入力端子を 選択します。ボタンを押して、対応する端子のランプを点 灯させます。

A: VIDEO A INPUT 端子に接続した信号をモニターする レき

B: VIDEO B INPUT 端子に接続した信号をモニターする とき

**TEST:** G/Y/TEST端子に接続したテスト信号をモニターするとき

#### ⑤ SYNC/5 (同期選択)ボタン<sup>1)</sup>とランプ

本機を同期させる同期信号を選択します。ボタンを押して、対応する同期モードのランプを点灯させます。

INT: 画面に表示されているコンポジット信号に含まれている同期信号に同期させるとき(内部同期)

**EXT:** EXT SYNC INPUT 端子に接続した外部同期信号に同期させるとき(外部同期)

#### ① SYSTEM/6 (システム選択) ボタン<sup>(1)</sup>とランプ

入力信号のカラー方式に応じて切り換えます。ボタンを押 して、対応するシステムのランプを点灯させます。

NTSC: NTSCカラー方式の信号をモニターするとき

PAL: PALカラー方式の信号をモニターするとき

SECAM: SECAMカラー方式の信号をモニターするとき

#### ご注意

デコーダー基板が取り付けられられていないカラー方式を 選択すると、次のような症状が現れます。

- FILTERランプが点灯しているとき(FILTER ON時)は、画像が出ません。
- FILTERランプが消灯しているとき(FILTER OFF時)は、 画像が白黒で表示されます。

- 1) これらのボタンは、数値入力にも使用します。
  - ◆ [1-4-5, パスワードの変更と設定] を参照してください。

#### ① YC SEP/7 (Y/C分離フィルター選択)ボタン<sup>(1)</sup>とランプ

YC分離に使用するフィルターを選択します。ボタンを押して、対応するフィルターのランプを点灯させます。

COMB: くし型フィルターが動作します。

TRAP: トラップフィルターが動作します。

#### ご注意

BT基板(NTSCくし型アダプター)が装着されていない場合、 またはNTSC以外のカラー方式が選択されている場合には、 このボタンの設定に関わらず、常にトラップフィルターが 動作します。

# WHITE BALANCE/8 (ホワイトバランス)ボタン<sup>(1)</sup> とランプ

希望のホワイトバランスおよび映像レベルがメモリーされているレジスターを選択します。ボタンを押して、対応するレジスターのランプを点灯させます。工場出荷時には、各レジスターにD93のホワイトバランスが設定されています。

**D65/D93 R0:** レジスター0にメモリーしたホワイトバランス と映像レベルを使用するとき

**MEM1 R1:** レジスター1にメモリーしたホワイトバランスと 映像レベルを使用するとき

**MEM2 R2:** レジスター2にメモリーしたホワイトバランスと 映像レベルを使用するとき

**MEM3 R3:** レジスター3にメモリーしたホワイトバランスと 映像レベルを使用するとき

PRESETSおよびWHITE BALANCE メニュー操作によって、 それぞれのレジスターに任意のホワイトバランスと映像レ ベルをメモリーさせることができます。

◆ [1-4. メニュー操作] を参照してください。

#### ® ASPECT/9 (アスペクト比選択)ボタン<sup>1)</sup>とランプ

画面表示の縦横の比率を選択します。ボタンを押して、対 応するアスペクトのランプを点灯させます。

**16:9:** 16:9アスペクトの画像をモニターするとき **4:3:** 4:3アスペクトの画像をモニターするとき

#### ご注意

4:3表示時は、3%アンダースキャン画像になります。

# (4) LOCAL/REMOTE/0 (ローカル/リモート) ボタン<sup>®</sup>とランプ

裏面パネルのREMOTE端子に接続した外部機器からモニ ターを操作するとき、ボタンを押してランプを点灯させます (REMOTEモード)。

外部からは操作したくない場合は、もう一度ボタンを押します(LOCALモード)。

◆リモートコントロール機能については、「1-4-6.リモートコントロール機能の割り当て」を参照してください。

# 1 MENU (メニューモード)ボタン

このボタンを押すとメニューモードになり、画面にメインメニューが表示されます。

#### 16 ESC (エスケープ)ボタン

メニュー操作またはオートセットアップ操作を中止すると き、このボタンを押します。

#### **⑰** SEL (選択)ボタン

オートセットアップ操作時、モニターに記憶した色温度を呼 び出すとき押します。カラーアナライザー機能でプローブの メモリー位置を選択するときにも使用します。

◆詳しくは、オートセットアップアダプターBKM-2056のオペレーション アンド メンテナンスマニュアルをご覧ください。

#### **1**B ENT (入力)ボタン

メニュー操作またはオートセットアップ操作中、次の操作ステップに進むときや設定したデータをメモリーにセーブするとき、このボタンを押します。

#### 19 ⇩ (カーソル) ボタン

メニュー操作またはオートセットアップ操作中、画面上の カーソルを動かすとき、このボタンを押します。押すたびに カーソルが画面下方に移動します。カーソルが最下段にある ときに押すと、カーソルは最上段に戻ります。

#### ② RESET (リセット)ボタン

オートセットアップ操作をリセットするとき、このボタンを押します。

- 1) これらのボタンは、数値入力にも使用します。
  - ◆「1-4-5. パスワードの変更と設定」を参照してください。

#### ② ASU (オートセットアップ)ランプ

CHROMA/PHASE: オートセットアップ操作のAUTO CHROMA/PHASEでクロマ/フェーズの自動調整が完了 すると点灯し、オートセットアップ操作のSELECT MONITORMEMでMANUALを選択すると消灯します。

WHITE BAL: オートセットアップ操作のSELECTMONITOR MEMで、オートホワイトバランス調整でモニターに転 送する色温度を選択すると点灯します。このランプが点 灯しているときは、SELECTMONITOR MEMの色温度 設定をWHITE BALANCE/8ボタンで行うことができる ようになります。

2 SPLIT SCREEN (スプリットスクリーン)ボタンとランプ ボタンを押してランプを点灯させると、画面の下半分の画像 が白黒で表示されます。

もう一度ボタンを押してランプを消灯させると、通常の画面 に戻ります。

# ② CROSSHATCH (クロスハッチ)ボタンとランプ

コンバージェンス調整などに使用するクロスハッチ信号を ON/OFFします。ボタンを押してランプを点灯させると (ON)、内部で生成したクロスハッチ信号が画面に表示され ます。クロスハッチ信号は、その時点で選択されているコン ポジット同期信号に同期します。

クロスハッチ信号をOFFにするときは、もう一度ボタンを押 してランプを消灯させます。

# ② PAL S/SECAM F/COMB S (PAL 復調モード/SECAM ID モード/くし型フィルター選択)ボタンとランプ

PAL信号をモニターしているときは、このボタンでPAL方式 の復調モードを選択します。ボタンを押してランプを点灯さ せるとS(シンプル)モードが選択されます。ランプ消灯時は D(デラックス)モードになります。

SECAM信号をモニターしているときは、このボタンで SECAM方式のIDモードを選択します。ボタンを押してラン プを点灯させるとF(フィールド)モードが選択されます。ラ ンプ消灯時はL(ライン)モードになります。

NTSCくし型フィルターBT基板(BKM-1412)を動作させてい るときは、このボタンでフィルターのタイプを選択します。 ボタンを押してランプを点灯させるとS(シンプル)タイプの くし型フィルターが選択されます。ランプ消灯時はD(ダイ ナミック)タイプになります。

#### ⚠ MATRIX (マトリックス)ボタンとランプ

通常はランプを消灯させておきます(OFF)。 ボタンを押してランプを点灯させると(ON)、色度補正マト リックス回路が働き、NTSC蛍光体の色度に準じた画像が得 られます。

もう一度押すと、マトリックス回路がOFFになります。

#### ② FILTER (フィルターON/OFF)ボタンとランプ

MONOモードのとき(前面パネルのMONO MODEスイッチ が押し込まれているとき)、フィルターを動作さるかどうか を設定します。ボタンを押してランプを点灯させると (ON)、YC SEPボタンで選択したくし型フィルターまたはト ラップフィルターが動作します。

もう一度ボタンを押してランプを消灯させると(OFF)、広い 周波数帯域の輝度信号が得られます。

#### ご注意

AUTOモードで(MONOMODEスイッチが押し込まれていな いとき)カラー信号が入力された場合は、このボタンの設定 に関わらず、常にフィルターが動作します。

# ② S.A.D./VITC/MARKER(セーフエリア/VITC/マーカー)ボ タンとランプ

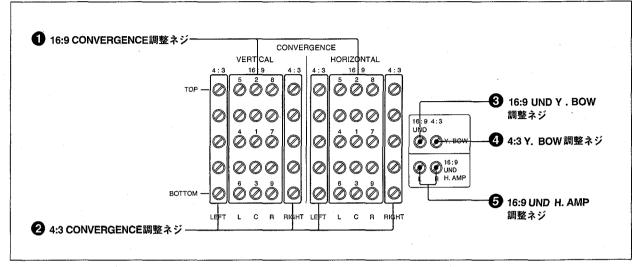
BQ基板(セーフエリアディスプレイBKM-1470)が装着されて いるときは、このボタンでセーフエリアの表示をON/OFF することができます。

BL基板(VITCアダプターBKM-1460)が装着されているとき は、VITCの表示をON/OFFすることができます。

# 2 PIC SETUP (ピクチャーセットアップ)ボタンとランプ 本機の黒レベルを入力レベルに合わせて調整するとき、この ボタンを押します。ランプが点灯し、本機の黒レベルが画面 に現れ、入力画像は縦の帯状に表示されます。

◆調整の方法については「1-7-2. 黒レベルの調整」を参照してくださ

#### DC基板 (コンバージェンス調整部)



DC基板

### **1** 16:9 CONVERGENCE (16:9 コンバージェンス)調整ネジ

16:9アスペクトのノーマルスキャン画像のコンバージェンス を調整します。VERTICAL調整ネジは垂直方向のコンバー ジェンスのずれ、HORIZONTAL調整ネジは水平方向のコン バージェンスのずれを調整します。それぞれのネジが画面の 位置に対応しています。

- ◆ 詳しくは、「1-6. コンバージェンス調整」を参照してください。
- **2** 4:3 CONVERGENCE (4:3 コンバージェンス)調整ネジ

4:3アスペクトの画像の左右のコンバージェンスを調整します。中央部は16:9 CONVERGENCE調整ネジの C (センター列) のネジで調整します。VERTICAL調整ねじは垂直方向のコンバージェンスのずれ、HORIZONTAL調整ネジは水平方向のコンバージェンスのずれを調整します。

- ◆詳しくは、「1-6-3. 4:3アスペクト画像の調整」を参照してください。
- **3** 16:9 UND Y. BOW (16:9 アンダースキャンYボウ)調整ネジ

アンダースキャン時の画面上下部の水平方向のコンバージェ ンスのずれの程度を調整します。

◆調整方法については、「1-6-2.16:9アンダースキャン画像の調整」を 参照してください。

### 4 4:3 Y. BOW (4:3 Y ボウ)調整ネジ

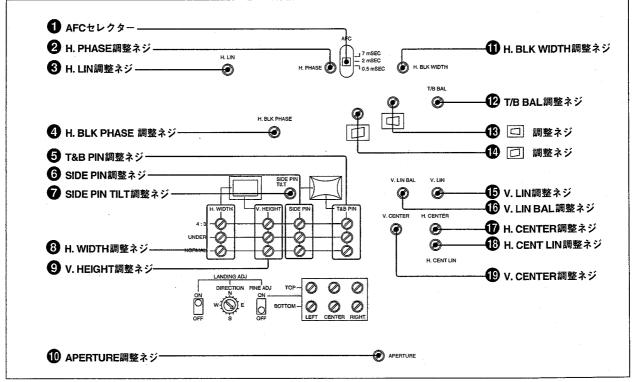
4:3アスペクト画像の上下部の水平方向のコンバージェンス のずれの程度を調整します。

- ◆調整方法については、「1-6-3、4:3アスペクト画像の調整」を参照してください。
- **⑤** 16:9 UND H. AMP (16:9 水平方向アンプ)調整ネジ

16:9アスペクトのアンダースキャン画像の水平方向のコンバージェンスのずれの程度を調整します。

◆調整方法については、「1-6-2.16:9アンダースキャン画像の調整」を 参照してください。

#### DA基板(画像ひずみ調整部)



DA基板

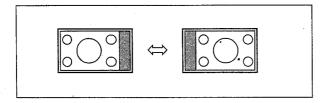
# ● AFC (自動周波数調整)セレクター

AFCの時定数を選択します。

- **0.5 mSEC** (ファーストモード): このモードにすると、VTRの ジッターがほとんど補正され、安定したVTR再生画像が得 られます。
- 2 mSEC (ノーマルモード): 出荷時はこの位置に設定してあ ります。
- 7 mSEC (スローモード): このモードにすると、VTR再生信 号中にある機械的ジッターなどに起因するタイムベースエ ラーが、そのまま画面に表示されます。

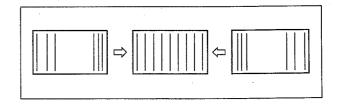
#### ② H. PHASE (水平方向位相)調整ネジ

画面の水平方向の位相を調整します。



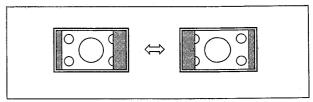
# ❸ H. LIN (水平方向リニアリティ)調整ネジ

画面の水平方向のリニアリティを調整します。



#### 4 H. BLK PHASE (水平ブランキング)調整ネジ

画面の両サイドの水平ブランキングの位相を調整します。



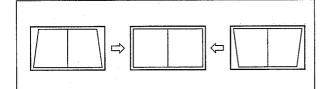
# **5** T&B PIN (上下ピンクッション)調整ネジ

画面上下部のピンクッション歪みを調整します。16:9アスペクトのノーマル画像にはNORMALネジを、アンダースキャン画像にはUNDERネジを、また4:3アスペクト画像には4:3 調整ネジをそれぞれ使用します。

# 6 SIDE PIN (左右ピンクッション)調整ネジ

画面両サイド部のピンクッション歪みを調整します。16:9アスペクトのノーマル画像にはNORMALネジを、アンダースキャン画像にはUNDERネジを、また4:3アスペクト画像には4:3調整ネジをそれぞれ使用します。

**7 SIDE PIN TILT (左右ピンクッションティルト)調整ネジ** 画面両サイド部のピンクッション歪みの位相を調整します。



# **8** H. WIDTH (画面幅)調整ネジ

画面の幅を調整します。16:9アスペクトのノーマル画像には NORMALネジを、アンダースキャン画像にはUNDERネジ を、また4:3アスペクト画像には4:3調整ネジをそれぞれ使用 します。

#### 9 V. HEIGHT (画面高)調整ネジ

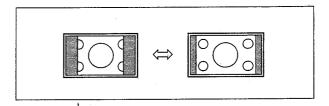
画面の高さを調整します。16:9アスペクトのノーマル画像にはNORMALネジを、アンダースキャン画像にはUNDERネジを、また4:3アスペクト画像には4:3調整ネジをそれぞれ使用します。

#### **1** APERTURE (アパーチャー)調整ネジ

前面パネルのAPERTUREスイッチを押し込んだ状態でこの 調整ネジを回し、輝度信号系の周波数特性を最大6dB変える ことができます。

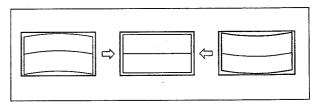
# **11** H. BLK WIDTH (水平ブランキング幅)調整ネジ

画面の両サイドの水平ブランキングの幅を調整します。



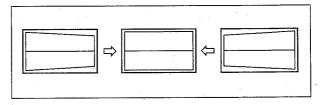
#### **12** T/B BAL (上下バランス)調整ネジ

画面のセンター(X軸)の歪みを調整します。



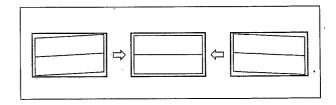
#### 18 □ (台形歪み)調整ネジ

水平台形の歪みを補正します。



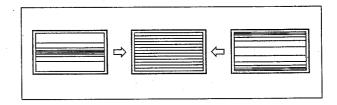
#### 14 🔲 (平行四辺形歪み)調整ネジ

偏向ヨークの直交歪みを補正します。



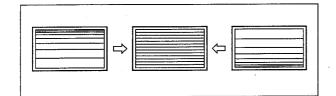
# 低 V. LIN (垂直方向リニアリティ)調整ネジ

画面の垂直方向(Y軸)のリニアリティを調整します。



す。

⑥ V. LIN BAL (垂直方向リニアリティバランス)調整ネジ 画面の垂直方向(Y軸)のリニアリティのバランスを調整しま

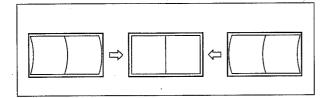


伊 H. CENTER (水平方向センタリング)調整ネジ

画面の水平方向のセンター位置を調整します。

**1**B H. CENT LIN (水平方向センタリングリニアリティ)調整ネジ

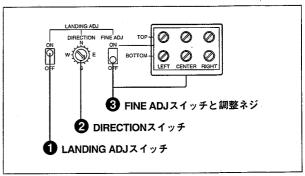
画面の水平方向のセンター位置(Y軸)の歪みを調整します。



V. CENTER (垂直方向センタリング)調整ネジ

画面の垂直方向のセンター位置を調整します。

#### R2基板 (ビームランディング補正部)



R2基板

**① LANDING ADJ (ランディング補正)スイッチ** ビームランディング回路をON/OFFします。通常はONにしておきます。

# ② DIRECTION (ランディング補正方向)スイッチ

LANDING ADJスイッチがONのとき働きます。スイッチの 矢印の向きを調整することにより、水平地磁気に対するブラ ウン管の向きの変化によって生じるビームランディングのず れを補正し、画面の色むらを補正することができます。

**③ FINE ADJ (ランディング微調整)スイッチと調整ネジ**

通常はスイッチOFFにしておきます。

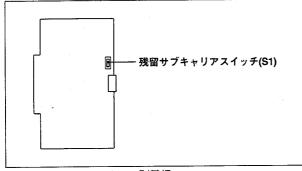
DIRECTIONスイッチによる調整で画面の色むらが調整しきれないとき、スイッチをONにして調整ネジで微調整を行います。6つのネジの位置は、画面の上下左右それぞれの位置に相当します。

◆詳しい調整方法については、「1-5. ビームランディング補正」をご 覧ください。

#### 1-3-4. 内部基板上のスイッチ

カバーの外しかたと各基板の位置については、第2章を参照してください。

#### BJ基板



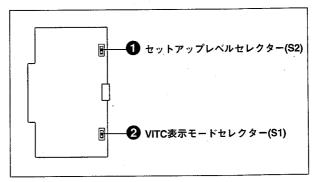
BJ基板

#### 残留サブキャリアスイッチ(S1)

工場出荷時は下側(OFF)に設定されています。

このスイッチを上側(ON)にすると、残留サブキャリアがあ る場合色相が変化しますので、残留サブキャリアの有無が容 易に確認できます。

#### BH基板



BH基板

#### **1** セットアップレベルセレクター(S2)

セットアップレベルを選択します。

0 IRE: セットアップレベルが0%になります。

**AUTO**(オート): MONITOR CONFIG メニューの

COMPONENT OFFSETまたはNTSC OFFSETで設定し たセットアップレベルに切り換わります。出荷時はこ の位置に設定してあります。

◆ [1-4-7. モニター動作条件の設定] を参照してください。

7.5 IRE: セットアップレベルが7.5%になります。

セットアップレベル0%はBH基板上のRV1調整ネジで、7.5% はRV2調整ネジで変えることができます。

(可変範囲: -2.5%~+12.5%)

#### ② VITC表示モードセレクター(S1)

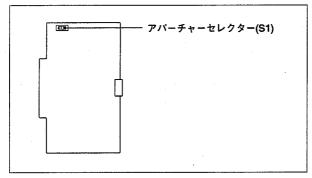
VITCを表示する文字の色とバックグラウンド枠の色を設定 します。

上側: 工場出荷時はこの位置に設定してあります。黒のバッ クグラウンド枠の中に白い文字で表示されます。

下側: 白のバックグラウンド枠の中に黒い文字で表示されま

◆詳しくは、VITCアダプターBKM-1460のマニュアルをご覧くださ ١, ١

#### BG基板



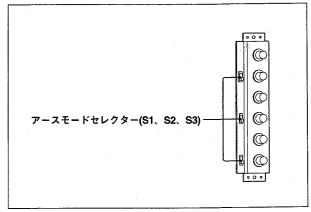
BG基板

#### アパーチャーセレクター(S1)

アパーチャー補正時のブースト周波数を 4.5 MHz または 6.5 MHz に切り換えます。出荷時は 4.5 MHz に設定されています。

#### QA、QB基板

QA基板は、後面パネルのVIDEO A、VIDEO B、EXT SYNC INPUT端子板の裏にあり、QB基板は、R/R-Y、G/Y/TEST、B/B-Y INPUT端子板の裏にあります。スイッチを切り換えるときは、第2章の記載に従ってINPUT端子板を取り外してください。



QA、QB基板

#### アースモードセレクター(S1、S2、S3)

QA基板のS1、S2、S3は、それぞれVIDEO A、VIDEO B、 EXT SYNC INPUT端子に対応しています。

QB基板のS1、S2、S3は、それぞれR/R-Y、G/Y/TEST、B/B-YINPUT端子に対応しています。

**S(ノンフローティングモード):** このモードにしておくと、電源ラインに高周波ノイズ(蛍光灯のノイズなど)が混入しても影響を受けません。工場出荷時はこの位置に設定してあります。

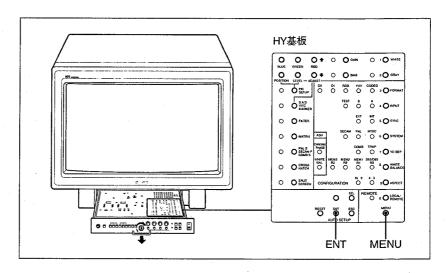
**F(フローティングモード):** 入力信号にハムノイズなどのコモンモードノイズがある場合は、この位置にするとノイズが除去されます。

# 1-4. メニュー操作

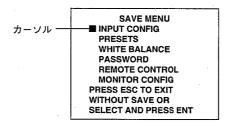
画面に表示されるメッセージに従って、モニターの各種機能や動作条件を設定する ことができます。

#### 1-4-1. メニュー操作の開始

メニュー操作には、ドロアー内のHY基板のボタンと前面パネルの一部のスイッチ 類を併せて使用します。



MENUボタンを押すと、モニター画面に次のようなメインメニューが表示されます。



**INPUT CONFIG:** 前面パネルの4個のINPUTセレクターで選択する入力信号の各種 条件を設定します。

PRESETS: フェーズ、クロマ、ブライトネス、コントラストのプリセット値、およびピクチャーセットアップレベル(基準黒レベル)を設定します。

WHITE BALANCE: ホワイトバランスをメモリーします。

PASSWORD:パスワードを設定します。

REMOTE CONTROL: リモートコントロール機能を設定します。

MONITOR CONFIG: 使用する別売り基板や信号のセットアップレベルなど、モニターの動作条件を設定します。また、ユーザーが変更したメニュー設定をすべて工場出荷状態に戻すこともできます。

#### メニュー項目を選択するには

∜ボタンを押してカーソルを希望の項目に動かして、ENTボタンを押します。 ∜ボタンを押すとカーソルは下に移動します。カーソルが最下行にあるとき∜ボタンを押すと、カーソルは最上行に戻ります。

#### メニュー操作を途中で止めるには

ESCボタンを押します。

YC SEP

COMB

メニュー操作のどの段階でも、ESCボタンを押すと操作がキャンセルされ、操作開始前の状態に戻ります。

#### 1-4-2. 入力信号の条件設定

前面パネルのINPUTセレクターには工場出荷時にそれぞれ次のような入力信号が割り当てられています。

INPUTセレクター 4 **FORMAT** CODED CODED COMPONENT RGB INPUT Α В SYNC INT INT INT INT **SYSTEM** NTSC NTSC **ASPECT** 16:9 16:9 16:9 16:9

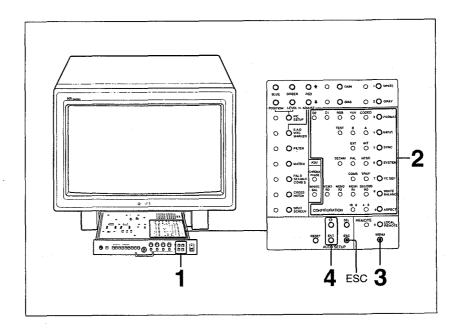
工場設定条件

ドロアー内のHY基板のCONFIGURATIONボタンで、これらの入力信号の条件を変更し、INPUT CONFIGメニュー操作でメモリーすることができます。

COMB

以後対応するINPUTセレクターを押すだけで、常にメモリーした条件の入力信号が 選択されます。

ただし、変更した条件をメモリーしなかった場合は、他のINPUTセレクターを押した時点で元の条件設定に戻ります。



#### 操作

- ¶ 前面パネルのINPUTセレクターを押す。
- **2** ドロアー内のCONFIGURATIONボタンで、手順1で押したINPUTセレクター の入力信号の条件を設定する。

各ボタンを押して、希望の条件に対応するランプを点灯させます。

**FORMAT**": 信号のフォーマット (CODED、YUV、RGB、D-1、D-2)を選択 します。

INPUT: フォーマットをCODED、D-1、D-2のいずれかに設定した場合、 入力端子を選択します。CODEDでは、A、BまたはTESTのいずれかを 選択します。D-1、D-2ではAまたはBを選択します。

SYNC: 同期モード (INTまたはEXT)を選択します。

**SYSTEM**<sup>1</sup>: フォーマットをCODEDまたはD-2に設定した場合、カラー方式 (NTSC、PAL、SECAM) を選択します。

**YCSEP**<sup>®</sup>: カラー方式をNTSCまたはPALに設定した場合、フィルター(COMB またはTRAP) を選択します。

WHITE BALANCE: 希望のホワイトバランスがメモリーされているレジスター(R0~R3) を選択します。

◆詳しくは、「1-4-4.ホワイトバランスの選択」を参照してください。

ASPECT: 画像のアスペクト比(4:3または16:9)を選択します。

これらのメニューでは、MONITOR CONFIGメニューのOPTION INSTALLATIONで、対応するオプション基板をYESに設定した選択 肢のみを指定することができます。

<sup>◆「1-4-7、</sup>モニター動作条件の設定」を参照してください。

- **3** 条件の設定が終わったら、MENUボタンを押す。 メインメニューが表示されます。
- **4** ↓ボタンを押してカーソルをINPUT CONFIGに動かし、ENTボタンを押す。

#### ご注意

メッセージ「PLEASE ENTER PASSWORD」が表示されたときは、パスワードを 入力してください。

◆「1-4-5.パスワードの変更と設定」を参照してください。

手順1で押したINPUTセレクターに、手順2で設定した条件がメモリーされます。 メッセージ「DATA SAVED」が数秒間表示され、通常のモードに戻ります。

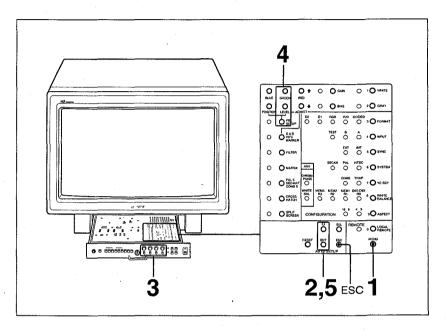
必要に応じて他のINPUTセレクターに対しても同様の操作を行います。

#### 操作を中止するには

手順4でENTボタンを押す前に、ESCボタンを押します。

#### 1-4-3.画像レベルのプリセット

PRESETSメニュー操作により、4組のフェーズ、クロマ、ブライトネス、コントラスト、ピクチャーセットアップレベル (基準黒レベル) の設定を、それぞれレジスターR0~R3にメモリーすることができます。



#### 操作

- **1** MENUボタンを押す。 メインメニューが表示されます。
- **2** ∜ボタンを押して、カーソルをPRESETSに動かし、ENTボタンを押す。 SAVE PRESETSメニューが表示されます。
  - SAVE PRESETS

    TEXT ON/OFF

    DATA REGISTER R0 \*
    DATA REGISTER R1
    DATA REGISTER R2
    DATA REGISTER R3
    PHASE 100 BRIGHT 100
    CHROMA 100 CONTRAST 100
    PICTURE SETUP LEVEL 100
    SELECT AND PRESS ENT

アステリスク(\*) は、WHITE BALANCEボタンで現在選択されているレジスターを示しています。メニュー画面の下部には、このレジスターにメモリーされている各画像レベルが、数値で表示されます。

#### ご注意

メッセージ「PLEASE ENTER PASSWORD」が表示されたときは、パスワードを入力してください。

- ◆「145.パスワードの変更と設定」を参照してください。
- **3** PHASE、CHROMA、BRIGHTNESS、CONTRAST MANUAL スイッチを押し込み、それぞれの調整つまみで希望のレベルに調整する。
- **4** PICSETUPボタンを押してランプを点灯させ、LEVELボタンの↑または↓を押してピクチャーセットアップレベルを調整する。

#### レベルを調整するには

手順3、4の調整は、メニュー画面下の数値表示(0~200、中央値100)を見ながら正確に行うことができます。

数値表示を消して画像を見ながら調整したいときは、カーソルを TEXT ON/ OFFにセットしてENTボタンを押します。SAVE PRESETSメニューが消えます。

もう一度ENTボタンを押すと、SAVEPRESETSメニューが再度表示されます。 ピクチャーセットアップレベルは「1-7-2.黒レベルの調整」の手順に従って調整してください。

**5** 設定した画像レベルをメモリーするレジスターにカーソルを動かし、ENTボタンを押す。

手順3、4で設定した画像レベルが、手順5で選択したレジスターにメモリーされます。

メッセージ「DATA SAVED」が数秒間表示され、通常のモードに戻ります。

必要に応じて他のレジスターにも同様の操作で画像レベルをメモリーします。

### 操作を中止するには

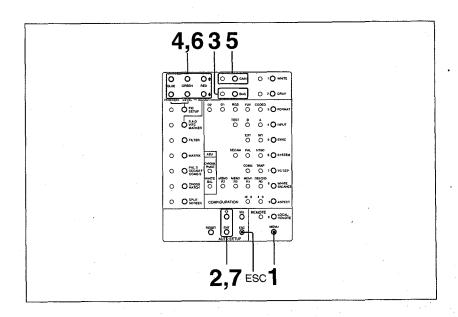
手順5でENTボタンを押す前に、ESCボタンを押します。

#### 1-4-4. ホワイトバランスの選択

4種類のホワイトバランスをRO~R3のレジスターにメモリーすることができます。 工場出荷時には、D93のホワイトバランス設定がRO~R3のレジスターにメモリーされています。

#### ご注意

ホワイトバランスの設定は、PRESETSメニュー操作で設定した画像レベルと同じ レジスターにメモリーされます。



#### 操作

- **1** MENUボタンを押す。 メインメニューが表示されます。
- **2** ↓ボタンを押して、カーソルをWHITE BALANCEに動かし、ENTボタンを押す。

SAVE WHITE BALANCEメニューが表示されます。

SAVE WHITE BALANCE

TEXT ON/OFF

DATA REGISTER R0 \*

DATA REGISTER R1

DATA REGISTER R2

DATA REGISTER R3

R: - GAIN 100 BIAS 100

G: - GAIN 100 BIAS 100

B: - GAIN 100 BIAS 100

SELECT AND PRESS ENT

アステリスク(\*) は、WHITE BALANCEボタンで現在選択されているレジスターを示しています。メニュー画面の下部には、このレジスターにメモリーされているレベルが、数値で表示されます。

#### ご注意

メッセージ「PLEASE ENTER PASSWORD」が表示されたときは、パスワードを入力してください。

- ◆ [1-4-5. パスワードの変更と設定] を参照してください。
- **3** BIASボタンを押す。 ボタンに対応するランプが点灯します。
- **4** RED、GREEN、BLUEボタンの † または ↓ を押して、R、G、Bのバイアスレベルを調整する。
- **5** GAINボタンを押す。 ボタンに対応するランプが点灯します。
- **6** RED、GREEN、BLUEボタンの † または ↓ を押して、R、G、Bのゲインレベルを調整する。

#### レベルを調整するには

手順3~6の調整は、メニュー画面下の数値表示(0~200、中央値100)を見なが ら正確に行うことができます。

数値表示を消して画像を見ながら調整したいときは、カーソルを TEXT ON/OFFにセットしてENTボタンを押します。SAVE WHITE BALANCEメニューが消えます。

もう一度ENTボタンを押すと、SAVE WHITE BALANCEメニューが再度表示 されます。

ホワイトバランスは「1-7-1.ホワイトバランスの調整」の手順に従って調整してください。

**7** 設定したホワイトバランスをメモリーするレジスターにカーソルを動かし、 ENTボタンを押す。

手順3~6で設定したホワイトバランスが、手順7で選択したレジスターにメモリーされます。

メッセージ「DATASAVED」が数秒間表示され、通常の動作モードに戻ります。

必要に応じて、他のレジスターにも同様の操作でホワイトバランスをメモリーします。

#### 操作を中止するには

手順7でENTボタンを押す前に、ESCボタンを押します。

#### 1-4-5.パスワードの変更と設定

メニュー設定が無断で変更されるのを防ぐため、メニューの各項目にパスワードを 設定することができます。

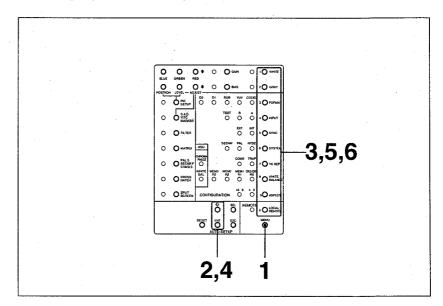
パスワードには、任意の4桁の数値を設定することができます。パスワードの入力には、左側に数字表示のあるHY基板のボタンを使用します。

パスワードが設定されたメニュー項目をメインメニューから選択すると、メッセージ「PLEASE ENTER PASSWORD (パスワードを入力してください)」が表示されます。

パスワードが正しく入力されなかった場合、または上記のメッセージが表示されてから約5秒以内に何も入力しないと、メッセージ「INCORRECT ENTRY (入力間違い)」が表示され、メニューモードは解除されます。

#### パスワードを変更するには

工場出荷時にはパスワードは「9999」に設定されています。次の手順に従って任意 の4桁の数値に変更してください。



#### 操作

MENUボタンを押す。 メインメニューが表示されます。

- **2** ↓ボタンを押して、カーソルをPASSWORDに動かし、ENTボタンを押す。 メッセージ「PLEASE ENTER PASSWORD」が表示されます。
- **3** 現在のパスワードを入力する (工場設定: 9999)。 PASSWORD MENUが表示されます。

#### PASSWORD MENU

■ CHANGE PASSWORD APPLY PASSWORD

SELECT AND PRESS ENT

- **4** CHANGE PASSWORDを選択する。 メッセージ「ENTER NEW PASSWORD (新しいパスワードを入力してくだ さい)」が表示されます。
- **5** 0~9のボタンを使用して、新しい4桁のパスワードを入力する。 メッセージ「PLEASE RE-ENTER PASSWORD TO CONFIRM (確認のため新 しいパスワードをもう一度入力してください)」が表示されます。
- **6** 新しいパスワードをもう一度入力する。 メッセージ「PASSWORD CHANGED (パスワードが変更されました)」が表示され、新しいパスワードが有効になります。

# ご注意

パスワードの入力を間違えると、「INCORRECT ENTRY. PASSWORD NOT CHANGED (入力間違い。パスワードは変更されませんでした)」が表示され、メニューモードが解除されます。

#### 操作を中止するには

手順6で新しいパスワードを再度入力する前に、ESCボタンを押します。

#### パスワードを設定するには

パスワードは、メインメニューの項目別に設定することができます。BKM-2056が装着されているときは、オートセットアップ操作にもパスワードの設定が可能です。

#### 操作

- **1** 前項「パスワードを変更するには」(1-31(f)~1-32(f)ページ)の手順1~3を行う。
- **2** ↓ ボタンとENTボタンでAPPLY PASSWORDを選択する。 APPLY PASSWORDメニューが表示されます。

APPLY PASSWORD

INPUT CONFIG NO
WHITE BALANCE NO
PRESETS NO
AUTO SETUP NO
REMOTE CONTROL NO
MONITOR CONFIG NO
SAVE AND APPLY

SELECT AND PRESS ENT

パスワードが設定されていない項目には「NO」が表示されます。 パスワードが設定されている項目には「YES」が表示されます。

- **3** ♥ ボタンを押して、パスワードの設定を変更したい項目にカーソルを動かす。
- **4** ENTボタンを押して、YESとNOを切り替える。 ENTボタンを押すごとにYESとNOが切り替わります。

必要に応じて、手順3、4を繰り返します。

**5** パスワードの設定が終了したら、カーソルをSAVE AND APPLYに動かして ENTボタンを押す。

メッセージ「PASSWORD APPLIED (パスワードが設定されました)」が数秒間表示され、通常のモードに戻ります。

# 操作を中止するには

手順5でENTボタンを押す前にESCボタンを押します。

#### 1-4-6. リモートコントロール機能の割り当て

本機では、STANDARD PARALLELとCONFIGURE PARALLELの2つのモードのリモートコントロールが可能です。 モードの切り換えは、REMOTE CONTROLメニューで行います。

REMOTE CONTROLメニューには、上記の他SERIAL REMOTE モードが表示されますが、このモードは今後使用が予定されているモードです。誤ってこのモードを選択したときは、ESCボタンを押してREMOTE CONTROLメニューを解除してください。

#### STANDARD PARALLEL # - F

工場出荷時には、リモートコントロールはSTANDARDPARALLELモードに設定され、裏面のREMOTE端子の各ピンに、それぞれ次のような機能が割り当てられています。



ピン割り当て

	機能			- 1	1	ピン番り	<b>;</b>	fis.	
INPUT	SYNC	MODE	1	2	3	4	5,,	6	7
A	INT	AUTO	0	0	-	0	_	_	-
		MONO	S	0		0		_	-
^ .	EXT	AUTO	0	0		S	-	-	_
		MONO	S	0	-	S	_	-	_
	INT ·	AUTO	0	S		0	_	-	_
В		MONO	S	S		0	_	-	_
	EXT	AUTO .	0	s	-	S	-	-	_
		MONO	S	S	_	S	_	_	_
VITC OFF		-	_	_	_	_	S		
VITC HOLD		-	_	_		_	0	s	
TALLY ON		-	_	S	_		_		

S: ピン8 とショートする

O: オープン

<sup>-:</sup> ショート、オープンいずれでも可

割り当てられた機能は、それぞれのピンをピン8とショートさせることによってコントロールされます。

ピン3はTALLY、ピン8はGNDに固定されています。

リモートコントロールによる操作は、モニターのスイッチやボタンによる操作より 優先されます。

#### **CONFIGURE PARALLEL** #= F

前面パネルおよびドロアー内の次のスイッチやボタンの機能を、REMOTE端子のNo.1、2、4~7の任意のピンに割り当てることができます。

#### 前面パネル

INPUTセレクター2~4 (入力選択)
MONO MODE スイッチ (AUTO/MONOモードの切り換え)

#### ドロアー内のHY基板

WHITEボタン (ON/OFF)

GRAYボタン (ON/OFF)

SYNCボタン (INT/EXT同期モードの切り換え)

YCSEPボタン(COMB/TRAPフィルターの切り換え)

ASPECTボタン(16:9/4:3アスペクトの切り換え)

S.A.D./VTTC/MARKERボタン (S.A.D.またはVITCのON/OFF)

FILTERボタン (ON/OFF)

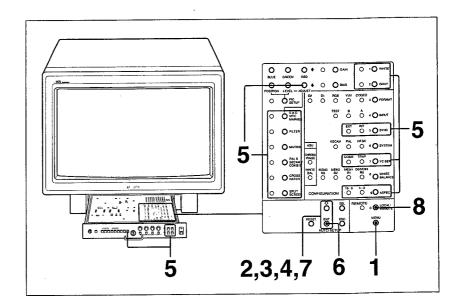
MATRIXボタン (ON/OFF)

PALS/SECAM F/COMBSボタン (モードまたはタイプの切り換え)

CROSSHATCHボタン (ON/OFF)

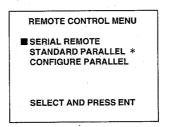
SPLITSCREENボタン (ON/OFF)

ADJUSTボタン (S.A.D.のサイズ変更またはVITCのホールド)



#### 操作

- **1** MENUボタンを押して、メインメニューを表示させる。
- **2** カーソルをREMOTE CONTROLに動かし、ENTボタンを押す。 REMOTE CONTROL MENUが表示されます。



アステリスク(\*)は、現在の設定を示します。 SERIAL REMOTEは現在は使用できませんので、ご注意ください。

**3** REMOTE端子のピン割り当てを変更するときは、カーソルをCONFIGURE PARALLELに動かし、ENTボタンを押す。 REMOTE端子のピン割り当てを工場出荷時の状態 (1-34(J)ページ) に戻すと

きは、カーソルをSTANDARD PARALLELに動かし、ENTボタンを押す。

# ご注意

. CONFIGURE PARALLELおよびSTANDARD PARALLELモードでは、ドロアー内のHY基板のHY4端子に4ピンコネクターが接続されていることが必要です。工場出荷時に接続されていますが、念のため確認してください。もし接続されていないときは、HY-2端子からコネクターを外してHY-4端子に接続してください。

STANDARD PARALLELを指定したときは、指定したモードがこの時点で有効になり、モニターは通常の状態に戻ります。

CONFIGURE PARALLELを指定したときは、CONFIG PARALLEL REMOTE メニューが表示されます。

CONFIG PARALLEL REMOTE

PIN 1 MONO
PIN 2 ASPECT
PIN 4 SYNC
PIN 5 INPUT SEL 2/1
PIN 6 INPUT SEL 3/1
PIN 7 INPUT SEL 4/1
SAVE AND APPLY
PIN 3 TALLY PIN 8 GND
SELECT AND PRESS ENT

**4** ♥ ボタンを押して、割り当てを変更したいピンにカーソルを動かし、ENTボタンを押す。

次のようなメッセージが表示されます。

#### **CONFIG PARALLEL REMOTE**

PLEASE SELECT FUNCTION TO BE APPLIED TO PIN AND PRESS ENT

- **5** 手順4で選択したピンに割り当てたい機能のボタン (1-35(J)ページ参照) を押す。
- **6** ENTボタンを押す。

必要に応じて、手順4、5、6を繰り返します。

- **7** ピン割り当ての変更が終了したら、カーソルをSAVE AND APPLYに動かし、ENTボタンを押す。
  メッセージ「DATA SAVED」が数秒間表示され、通常の動作モードに戻ります。
- **8** LOCAL/REMOTEボタンを押してREMOTEランプを点灯させ、モニターをリモートモードにする。

#### 操作を中止するには

手順7でENTボタンを押す前に、ESCボタンを押します。

#### ご注意

- INPUTセレクター2、3、4をREMOTE端子のピンに割り当てたときは、このピンをGNDにつなぐと、対応するINPUTセレクターの入力信号に切り換わります。 オープン状態ではINPUTセレクター1の入力信号が選択されます。
- 2つ以上のINPUTセレクターをREMOTE端子のピンに割り当てたときは、これらのピンを同時にGNDにつながないでください。

# 1-4-7. モニター動作条件の設定

MONITOR CONFIGメニュー操作では、次のようなモニターの動作条件を設定します。

OPTION INSTALLATION: 装着した別売り基板を指定する。

D1 CONFIGURATION: D-1信号を受信するシステムを指定する。

COMPONENT OFFSET: コンポーネント信号のセットアップレベルを設定する。

NTSC OFFSET: NTSC信号のセットアップレベルを設定する。

MONITOR TYPE: モニターの型名を指定する。

MONITOR CONFIGメニューには、すべてのメニュー項目の設定を工場出荷時に 戻すための項目「RESTORE FACTORY SETUP」も含まれています。

#### MONITOR CONFIGメニュー操作を開始するには

- **1** MENUボタンを押して、メインメニューを表示させる。
- **2** カーソルをMONITOR CONFIGに動かし、ENTボタンを押す。 MONITOR CONFIGURATIONメニューが表示されます。

# MONITOR CONFIGURATION

■ OPTION INSTALLATION
D1 CONFIGURATION
COMPONENT OFFSET
NTSC OFFSET
MONITOR TYPE
RESTORE FACTORY SETUP

SELECT AND PRESS ENT

#### 装着した別売り基板を指定するには

カーソルをMONITOR CONFIGURATIONメニューの OPTION INSTALLATIONに動かし、ENTボタンを押す。
OPTION INSTALLATIONメニュー1 が表示されます。

OPTION INSTALLATION 1

AUTO SETUP NO
D1 OPTION NO
D2 OPTION NO
NTSC DECODER YES
NTSC COMB ADP YES
PAL DECODER NO
PAL COMB ADP NO
OTHER OPTIONS
SELECT AND PRESS ENT

**2** ∜ボタンを押して、YES/NO表示を切り替えたい基板にカーソルを動かし、 ENTボタンを押す。

装着した基板にはYESを表示させ、装着していない基板にはNOを表示させます。ENTボタンを押すごとに、YESとNOが切り替わります。

必要に応じて手順2を繰り返します。

**3** カーソルをOTHER OPTIONSに動かし、ENTボタンを押す。 OPTION INSTALLATIONメニュー2が表示されます。

OPTION INSTALLATION 2

PAL-M DECODER NO
SECAM DECODER NO
RGB/COMP O/P NO
VITC BOARD NO
SAFE AREA NO
BLACK GENER NO
OTHER OPTIONS
SAVE AND APPLY
SELECT AND PRESS ENT

- 4 メニュー1と同様、メニュー2で表示された基板のYES/NOを設定する。
- **5** 設定が終わったら、カーソルをSAVE AND APPLYに動かし、ENTボタンを押す。

メッセージ「DATA SAVED」が数秒間表示され、通常の動作モードに戻ります。

# D-1信号を受信するシステムを指定するには

次の手順に入る前に、前出のOPTION INSTALLATIONメニュー1のD1 OPTION をYESに設定してください。

1 カーソルをMONITOR CONFIGURATIONメニューのD1 CONFIGURATION に動かし、ENTボタンを押す。 D1 CONFIGURATION メニューが表示されます。

D1 CONFIGURATION

**■** PAL NTSC SECAM

SPECIFY SETTING OF LOCAL SWITCH ON BY BOARD

SELECT AND PRESS ENT

アステリスク(\*)は、現在の設定を示します。

- **2** ↓ボタンを押して、カーソルをBV基板のローカルスイッチの設定と同じシ ステムに動かす。
- **3** ENTボタンを押す。 メッセージ「DATA SAVED」が数秒間表示され、通常の動作モードに戻り ます。

#### コンポーネント信号のセットアップレベルを設定するには

1 カーソルをMONITOR CONFIGURATIONメニューの COMPONENT OFFSETに動かし、ENTボタンを押す。 COMPONENT OFFSETメニューが表示されます。

#### COMPONENT OFFSET

■ N-10/SMPTE BETACAM 0 BETACAM 7.5

SELECT AND PRESS ENT

アステリスク(\*)は、現在の設定を示します。

2 ↓ボタンを押して、セットアップレベルを選択する。

**N-10/SMPTE**: 100/0/100/0 のコンポーネント信号を入力するとき

**BETACAM 0:** 100/0/75/0のコンポーネント信号を入力するとき

BETACAM 7.5: 100/7.5/75/7.5のコンポーネント信号を入力するとき

**3** ENTボタンを押す。 メッセージ「DATA SAVED」が数秒間表示され、通常の動作モードに戻り ます。

#### NTSC信号のセットアップレベルを設定するには

**1** カーソルをMONITOR CONFIGURATIONメニューのNTSC OFFSETに動かし、ENTボタンを押す。

NTSC OFFSETメニューが表示されます。

NTSC OFFSET

■0 PERCENT \*
7.5 PERCENT

SELECT AND PRESS ENT

アステリスク(\*)は、現在の設定を示します。

- **2** ♥ボタンを押して、セットアップレベルを選択する。 **0 PERCENT:** セットアップレベルが0 IREのNTSC信号を入力するとき **7.5 PERCENT:** セットアップレベルが7.5 IREのNTSC信号を入力するとき
- **3** ENTボタンを押す。 メッセージ「DATA SAVED」が数秒間表示され、通常の動作モードに戻り ます。

#### モニターの機種を指定するには

**1** カーソルをMONITOR CONFIGURATIONメニューのMONITOR TYPEに動か し、ENTボタンを押す。

MONITOR TYPEメニューが表示されます。

#### MONITOR TYPE

■ BVM-1311/1411 BVM-1316/1416 BVM-1916/2016 BVM-2811/3011 \*

SELECT AND PRESS ENT

アステリスク(\*)は、現在の設定を示します。

- 2 ↓ボタンを押して、カーソルを使用モニターの機種名に動かす。
- **3** ENTボタンを押す。 メッセージ「DATA SAVED」が数秒間表示され、通常の動作モードに戻り ます。

# メニュー設定を工場出荷状態に戻すには

カーソルをMONITOR CONFIGURATIONメニューのRESTORE FACTORY SETUPに動かし、ENTボタンを押す。 次のようなメッセージが表示されます。

#### RESTORE FACTORY SETUP

WARNING !! THIS WILL DESTROY ALL MANUALLY ENTERED DATA AND CONFIGURATIONS

PRESS ENT TO CONFIRM OR ESC TO QUIT

**2** ENTボタンを押す。 設定を変更したすべてのメニュー項目が、工場出荷状態に戻ります。

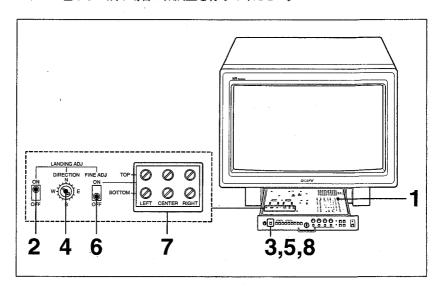
#### 操作を中止するには

手順2でENTボタンを押す前に、ESCボタンを押します。

# 1-5. ビームランディング補正

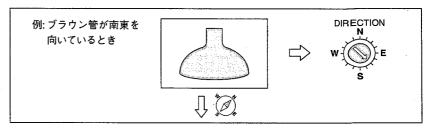
本機を設置するときや、設置場所を移動したとき、水平地磁気に対するブラウン管の向きの変化によってビームランディングがずれ、画面に色むらが生じた場合は、ドロアー内のR2基板でビームランディングを補正します。

ビームランディングの補正には、まず方角調整(粗調整)を行って、それでも補正し きれない色むらが残る場合は微調整を行ってください。



#### 方角調整

- **1** HY基板のWHITEボタンを押して内部100%白信号を画面に表示させるか、外部から入力したフラットフィールド信号を画面に出し、30分以上通電する。
- **2** LANDING ADJスイッチをONにする。 このときFINE ADJスイッチはOFFにしておきます。
- **3** 前面パネルのDEGAUSSスイッチを押す。
- **4** ブラウン管の前面が向いている方角を磁石で確かめ、DIRECTIONスイッチを回してブラウン管が向いている方角の目盛りに合わせる。



方角がわからないときは、フラットフィールド信号を出し、DIRECTIONスイッチを回して画面の白が最も均一になる位置に合わせてください。

**5** もう1度DEGAUSSスイッチを押す。

# ご注意

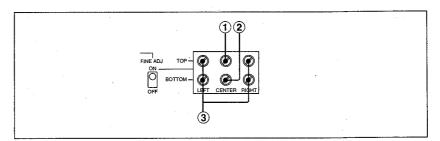
DEGAUSSスイッチは、1度押してからもう1度押すまでに5分以上間をおいてください。

1度押してからすぐにもう1度押しても効果がありません。

画面全体の白の均一性を確認し、まだ色むらがある場合は、続けて微調整を行って ください。

# 微調整

- **6** FINE ADJスイッチをONにする。
- **7** 微調整ネジで、画面の各部の白が均一になるように調整する。 ネジの位置は画面の上下左右のそれぞれの位置に対応しています。調整は下 記の順番で行います。



**8** DEGAUSSスイッチを押す。

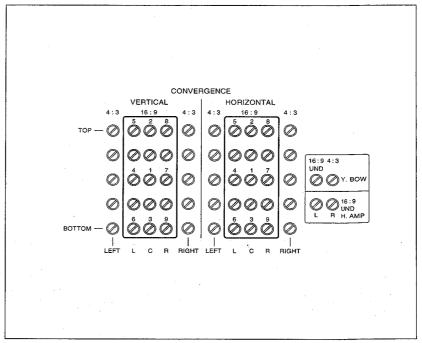
色むらがなくなるまで、手順7、8を繰り返します。

# 1-6. コンバージェンス調整

ドロアー内部のCONVERGENCE調整ネジを使って調整します。 ネジを回すときは、付属のドライバーを使用してください。

#### 1-6-1.16:9ノーマルスキャン画像の調整

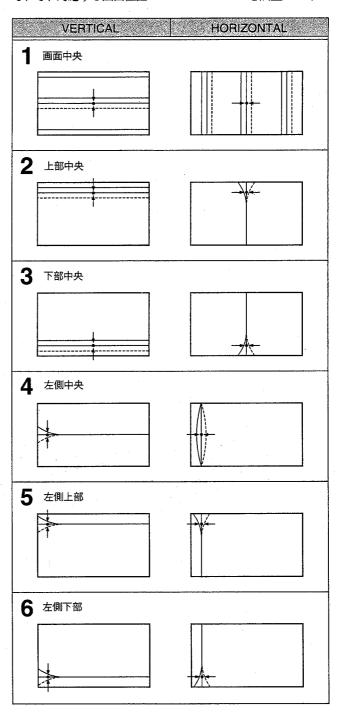
16.9調整ネジで、16.9ノーマルスキャンモードのコンバージェンスを調整します。

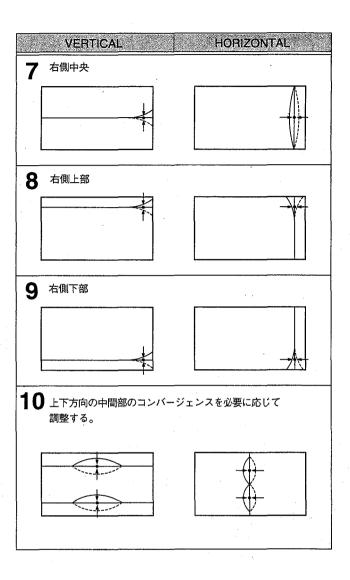


DC基板

- 上図の1~9の数字は、以下の調整手順の番号に対応しています。
- VERTICAL調整ネジは垂直方向の調整用、HORIZONTAL調整ネジは水平方向の 調整用です。
- 以下のページの図の中で矢印で示された画面位置のコンバージェンスを調整します。緑に対して赤と青が対称に動きます。

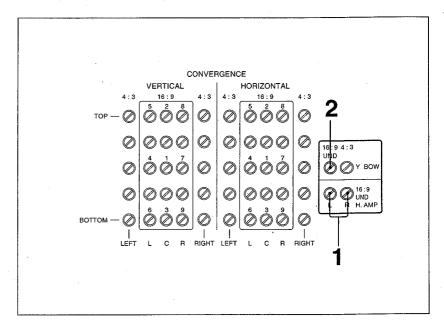
それぞれ対応する画面位置のコンバージェンスを調整してください。



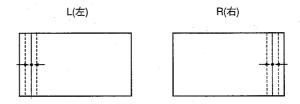


# 1-6-2.16:9アンダースキャン画像の調整

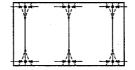
16:9ノーマルスキャン画像の調整後、16:9アンダースキャンモードに切り換えたと きにコンバージェンスのずれがある場合、16:9 UND H. AMP調整ネジと16:9 UND Y.BOW調整ネジを調整します。



16:9 UND H. AMP 調整ネジで水平方向のコンバージェンスを調整する。

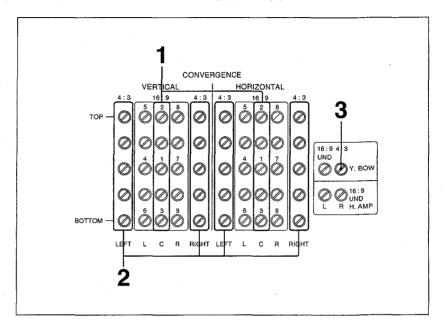


**2** 16:9UNDY.BOW調整ネジで画面の上下部の水平コンバージェンスを調整す る。



#### 1-6-3.4:3アスペクト画像の調整

4:3スキャンモードのコンバージェンスを調整します。

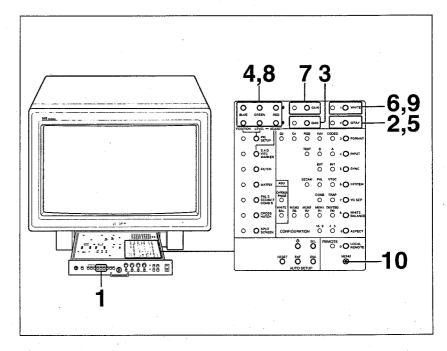


- **1** 「1-6-1. 16:9ノーマルスキャン画像の調整」の手順1~3に従って、画面中央部を調整する。
- 2 4.3調整ネジを回して、画面の左右部分のコンバージェンスを調整する。
- **3** 4:3 Y.BOW調整ネジを回して、画面四隅の水平コンバージェンスを調整する。

# 1-7. 画像の調整

# 1-7-1. ホワイトバランスの調整

調整中は、前面パネルのSCREENスイッチでR(赤)、G(緑)、B(青)の信号を必要に 応じてON/OFFしてください。



# 操作

- 1 調整用のテスト信号を画面に表示させる。
- **2** GRAYボタンを押す。 ボタンに対応するランプが点灯し、内部グレイ信号が画面に表示されます。
- **3** BIASボタンを押す。 ボタンに対応するランプが点灯します。
- **4** BLUE、GREEN、REDボタンの↑または↓を押して暗部のホワイトバラン スを調整する。
- **5**・もう一度GRAYボタンを押す。 ランプが消灯し、内部グレイ信号が消えます。

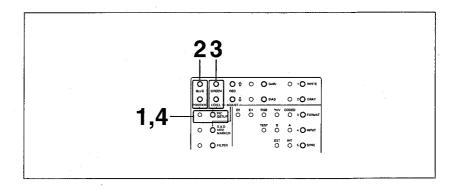
- **6** WHITEボタンを押す。 ボタンに対応するランプが点灯し、内部100%白色信号が画面に表示されま す。
- **7** GAINボタンを押す。 ボタンに対応するランプが点灯します。
- **8** BLUE、GREEN、REDボタンの ↑ または ↓ を押して明部のホワイトバランスを調整する。
- **9** 調整が終わったら、もう一度WHITEボタンを押し、白色信号を消す。

必要に応じて手順2~9を繰り返し、暗部から明部まで同じ白色が得られるように調整します。

- ◆カラーアナライザーなどを使ったホワイトバランス調整の方法については、第2章以降を参照 してください。
- **10** MENUボタンを押してSAVEWHITE BALANCEメニューを表示させ、ホワイトバランスをレジスターにメモリーする。
  - ◆ 「1-4-4. ホワイトバランスの選択」を参照してください。。

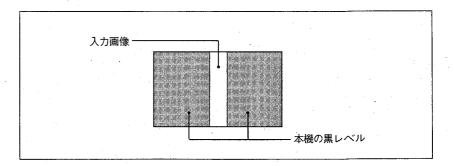
# 1-7-2. 黒レベルの調整

本機の黒レベルを入力信号の黒レベルに合わせて調整します。



#### 操作

**1** PIC SETUPボタンを押す。 対応するランプが点灯し、縦帯状の入力画像と本機の黒レベルが画面に現れます。



- **2** POSITIONボタンの↑または↓を押して、帯状の入力画像部の位置を左右に動かし、入力画像の黒色部が本機の黒レベル部と隣接するように設定する。
- 3 LEVELボタンの↑または↓を押して、本機の黒レベル部のブライトネスが入力画像の黒色部と同一になるように調整する。
- **4** PIC SETUPボタンを押す。

# 1-8. 主な仕様

一般

信号方式 NTSC、525本、60フィールド/秒インターレース

CRT 16:9アスペクトスーパーファインピッチトリニト

ロン、蛍光面ピッチ0.35 mm、90°偏向、∅36.5 mm

インラインガン

有効画面サイズ:348.8×620mm (高さ/幅)

対角711.4mm (28インチ)

CRT保護 EHT保護タイプ

ウォームアップ時間 約30分

アノード電圧 27kV (CRTカットオフ時)

消費電力 175W

最大210W

電源 AC100~120Vまたは220~240V±10%

最大外形寸法 754×615×677 mm (幅/高さ/奥行き)

質量 92 kg

入出力

映像入力 BNC型 (ループ出力付き5入力)

VIDEO A/B、TEST、R/G/B: コンポジット、 1Vpp±6dB、正極性、ハイインピーダンス Y:コンポジット、1.0Vpp±6dB、ハイインピーダ

ンス

R-Y/B-Y:0.7Vp-p±6dB、ハイインピーダンス

同期入力 EXT SYNC: BNC型(ループ出力付き1入力)

1~8Vpp、負極性、ハイインピーダンス

リターンロス 46dB以上 (7MHz、75Ω終端時)

ハム抑圧比 50dB以上

許容入力ハム:4Vrms

アースモードをF(フローティング) に設定したとき

映像出力 DECODER OUT: BNC型 (3)

BKM-1440装着時のみ出力

リモートコントロール

REMOTE: 10ピン(1)

プローブ端子

AUTO SETUP PROBE: 12ピン(1)

#### 映像信号系

輝度信号系 (RGB、コンポジット)

DG (微分利得)

2%以内(輝度0~68cd/m²にて)

DP (微分位相)

2°以内(輝度0~68cd/m²にて)

周波数特性

白黒モード:

トラップまたはくし型フィルターOFFのとき 100Hz~8MHz±1dB(アパーチャー補正0)

● フィルターONのとき3.58 MHzでー30dB

カラーモード: 3.58MHzで-30dB、トラップフィルターまたはくし型フィルターが動作し、3.58

MHzサブキャリアを除去

RGB モード: 100 Hz~10 MHz±1 dB

色信号系

復調軸

R-Y, B-Y

色信号系带域幅

1.3 MHz(両側波帯)

サブキャリア再生誤差

±1°(標準信号入力時)

クロマ位相調整範囲

±15°以上(基準信号入力時)

クロマ利得調整範囲

±6dB以上

色信号/輝度信号

遅延時間差

30ns以下

利得誤差

5%以内

アパーチャー補正

4.5MHzまたは6.5MHzにおいて0~6dBまで調整可

能 (4.5 MHzまたは6.5 MHzは切り換え可能)

直流再生 (RGB、コンポジット)

バックポーチ方式

APL10~90%の入力信号変化に対し、黒レベルの変

動は1%以下

同期系

AFC時定数

0.5ms: ファーストモード

2ms:ノーマルモード

7ms: スローモード

水平引込み範囲/水平保持範囲

±500Hz以上(AFC時定数0.5ms時)

垂直帰線時間

ノーマル:1ms以内

アンダースキャン:0.8ms以内

水平帰線時間

10 μs以内

画像系

ノーマルスキャン

CRT有効画面の5%オーバースキャン

(調整範囲±15%以上)

アンダースキャン

CRT有効画面の3%アンダースキャン

(調整範囲±15%以上)

直線性

画面高を直径とする円内で、画面高の約0.5%以内、

円外で約1%

色温度

9300K (他の色温度にも調整可)

色度点 (中心值)

EBU蛍光体

	х	у
R	0.64	0.33
Ģ	0.29	0.60
В	0.15	0.06

コンバージェンスエラー

中心部: ±0.5mm以下

周辺部: ±0.8mm以下

標準輝度

68cd/m²(1Vp-p基準記号、100%WHITE入力時)

ラスターサイズ安定度

画面高の1%以下

(68 cd/m<sup>2</sup>のピーク輝度で0~100% APL時)

スキャンディレイ

水平:約1/4ライン

垂直:約1/2フィールド

解像度

950TV本 (中心部、輝度68 cd/m2にて)

環境条件

動作温度

0~40℃

推奨使用温度範囲

20~30℃

湿度

0~90% (非結露にて)

高度

約3,050m

# 付属品

電源コード(1) コードストッパー(1) 調整用ドライバー(1) ドロアー用キー(2) 延長基板(1) 10ピンコネクター(1) ヒューズ(2) オペレーションアンドメンテナンスマニュアル(1) 保証書(1)

本機の仕様および外観は、改良のため予告なく変更することがありますが、ご了承ください。

# Section 1 Operation

# 1-1. Overview

#### 1-1-1. Features

The BVM-2811 and BVM-3011P are high-performance color video monitors designed for critical evaluation of video signals in broadcasting stations and production houses.

The BVM-2811 is the NTSC model intended for use in NTSC color standard areas and the BVM-3011P is the PAL model for the PAL color standard areas. By using optional plug-in type decoder boards, both models permit any of the NTSC, PAL, SECAM, D1 and D2 video signals to be monitored.

The differences between models are clarified in the texts.

#### **High-resolution picture**

The Super Fine Pitch Trinitron picture tube (0.35-mm phosphor trio pitch) gives a high resolution, high contrast picture. Horizontal resolution is 950 TV lines at the center of the picture.

#### Stabilized color temperature

The incorporated beam control circuit maintains the color temperature constant for a long period of time.

#### 16:9 wide screen

The 16:9-aspect picture tube is employed for monitoring the increasing number of wide-screen programs. The aspect can be switched from 16:9 to 4:3, as desired.

#### Split screen for precise picture confirmation

The lower half of the picture can be displayed in monochrome mode while the upper half is displayed in color mode. This facilitates confirmation of the luminance and chrominance channels, evaluation of the noise in the chrominance or luminance channel, etc.

#### Blue-only mode for precise evaluation of noise components

In blue-only mode, an apparent monochrome display is obtained with, all three control grids driven with a blue signal. This facilitates color saturation and phase adjustments and observation of VTR noise.

# Easy and precise convergence adjustment

The convergence can be adjusted at 15 points of the screen. This system facilitates adjustment of the peripheral areas of the screen.

#### Easy-to-use menu operations

The essential parameters to be preset for video monitoring can be easily set by selecting menu options displayed on the screen.



# Beam landing adjustment

When installing the monitor, the built-in beam landing adjustment circuitry permits you to correct the beam landing which may be affected by horizontal terrestrial magnetism.

# D-1 format serial digital signal inputs (BVM-2811)

The BVM-2811 is equipped with two inputs to accept D-1 format serial digital signals through coaxial cables.

The serial inputs have the respective active-through outputs, which permit the input signals to be distributed to other video equipment up to 200 m<sup>1)</sup> away.

#### Other features

- Picture setup function facilitating adjustment of the monitor's reference black for the black level of an incoming video signal
- Pulse cross function for simultaneous checking of the horizontal and vertical sync signals or VITS (Vertical Interval Test Signal)
- Built-in crosshatch and 100% white signal generators, facilitating monitor setup
- VITC (Vertical Interval Time Code) display possible using the optional BKM-1460 VITC adaptor
- Auto chroma/phase adjustment, automatic white balance adjustment etc. are possible using the optional BKM-2056 auto set-up adaptor.
- Precise setting of black level of the monitor, using the optional BKM-1480 black level signal generator
- A drawer containing convergence, white balance and menu controls and other function selectors
- High-performance comb filter available for the BVM-2811 as builtin standard. (For the BVM-3011P, the BKM-1422 is available as an option.)
- Auto and manual degaussing
- Three-position AFC switch
- Overdrive protection circuit to protect against picture tube damage

than 25 dB in a condition of 10 MHz signal transmission with 1 km in length (e.g. Fujikura's 5C-2V (RG-6AU)).

<sup>1)</sup> Max. 200-m transmission is guaranteed only when a specific cable is used. The cable should be a 75-ohm 5C-2V coaxial one assuring signal deterioration less

# 1-1-2. Options

The following optional accessories are available for flexible changes and enhancement of the functions of the monitor.

# Caution

When installing the optional boards, be sure to perform the necessary settings by following the procedure mentioned in "To specify the installed optional boards" of "1-4-7. Defining the Monitor Configuration." If the settings are not correctly performed, the optional boards may not function properly.

**BKM-1410 NTSC adaptor (BC board)** [built-in standard for the BVM-2811]

Decoder board for the NTSC color system

**BKM-1412 NTSC comb adaptor (BT board)** [built-in standard for the BVM-2811]

Dynamic comb filter board for the NTSC color system

**BKM-1420 PAL adaptor (BD board)** [built-in standard for the BVM-3011P]

Decoder board for the PAL color system

**BKM-1421 PAL-M adaptor (BM board)** 

Decoder board for the PAL-M color system

BKM-1422 PAL comb adaptor (BT board)

Comb filter board for the PAL color system

BKM-1430 SECAM adaptor (BE board)

Decoder board for the SECAM color system

**BKM-1440 RGB/component adaptor (BF board)** 

Decoder outputs of RGB or component signals

**BKM-1460 VITC adaptor (BL board)** 

Reader of Vertical Interval Time Code

BKM-1470 safe area display (BQ board)

For displaying the safe area

BKM-1480 black level signal generator (BS board)

For generating black level signals

BKM-2053 auto set-up probe

For auto set-up operation with the BKM-2056 auto set-up adaptor

#### BKM-2056 auto set-up adaptor (BN, BO and BP boards)

For auto chroma/phase adjustment, auto white balance adjustment, and selection of color temperature

# BKM-2085-20 digital 4:2:2 serial input kit (BA3 and BV boards)

[built-in standard for the BVM-2811]

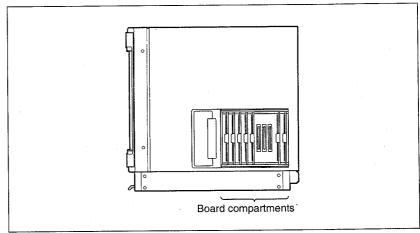
For two serial inputs of component digital video signals

# BKM-2090-20 D-2 serial input kit (BA3 and BU boards)

For two serial inputs of a digital composite video signal

#### Combination of the optional boards

The BVM-2811/3011P is equipped with the board compartments B1 through B5 behind the right-side panel, each of which can hold an optional board selected from the B boards listed above.



Right-side view

The BVM-2811 comes from the factory with the BV (digital 4:2:2 serial input kit), BT (NTSC comb adaptor) and BC (NTSC adaptor) boards installed in compartments B1, B4 and B5.

The BVM-3011P comes from the factory with the BD (PAL adaptor) boards installed in compartment B5.

Note that the combinations of boards are limited by the allowable board assignments, as shown in the table on the next page. Add the desired boards or replace the supplied boards with optional boards, referring to the table on the next page.

#### Notes

- The compartments other than B1 through B5 are reserved for the supplied BA/BA3, BG, BH, BI and BJ boards. Be sure to use these boards in the respective compartments having the same names.
- Do not leave compartment B5 empty. Be sure to insert one of the boards specified in the table on the next page. If no board is inserted, the luminance/chrominance or luminance channel will not be activated in composite signal mode.

#### Board assignment

Board name	Function	Compartment name					
Doard Halle	Function (	B5	B4	В3	B2	B1	
BT (BKM-1412)	NTSC comb filter	0	0	0	0	0	
BT (BKM-1422)	PAL comb filter	0	0	0	0	0	
BC (BKM-1410)	NTSC decoder	0	0	0	0	0	
BD (BKM-1420)	PAL decoder	0	0	0	0	0	
BE (BKM-1430)	SECAM decoder	0	0	0	0	0	
BM (BKM-1421)	PAL-M decoder	0	0	0	0	0	
BF (BKM-1440)	RGB/component adaptor	х	х	0	х	х	
BL (BKM-1460)	VITC reader	Х	Х	Х	0	Χ.	
BQ (BKM-1470)	Safe area display	Х	Δ	Х	0	Х	
BS (BKM-1480)	Black level signal generator	0	0	0	0	0	
BN, BO, BP (BKM-2056)	Auto set-up adaptor	0	0	Х	×	Х	
BV, BA3 (BKM-2085-20)	Digital 4:2:2 serial interface	х	Х	Х	х	0	
BU, BA3 (BKM-2090-20)	D-2 serial interface	х	Х	Х	х	0	

○ : acceptable× : not acceptable

 $\Delta$ : acceptable but the button settings on the subcontrol panels cannot control the display.

#### Notes

- Do not use the BD (PAL decoder) and the BM (PAL-M decoder) boards simultaneously. This causes malfunctions of the monitor.
- The BKM-2085-20 is the built-in standard for the BVM-2811. When some optional boards listed above are used in combination, note that the following functions of these boards are not operative.

Boards	Inoperative function			
BKM-1440 RGB/component adaptor	All functions			
BKM-2090-20 D-2 serial interface				
BKM-2056 Auto set-up adaptor	Function to store color temperatures for the standard monitor (without auto set-up function)     Function to detect color data of the monitor without auto set-up function			

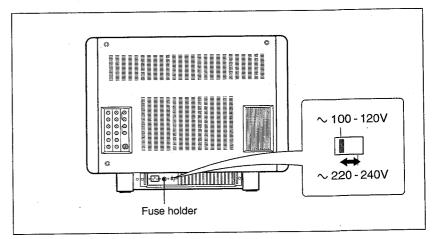
For details on installation and functions of the optional boards, refer to the operation and maintenance manuals of the boards.



# 1-2. Voltage Selection

The BVM-2811 operates on  $100\text{-}120~\mathrm{V}$  AC and the BVM-3011P operates on  $220\text{-}240~\mathrm{V}$  AC.

Before connecting the unit to an AC outlet, make sure the voltage selector at the rear of your monitor is set for the appropriate voltage. If not, change the position of the selector.



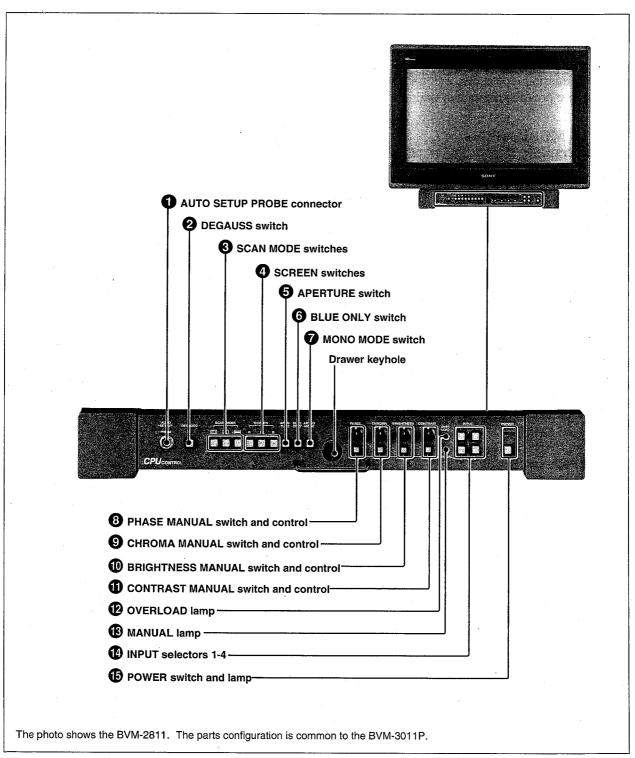
Voltage selector

# Note

Use a 4A/125 V fuse for the BVM-2811 (100-120 VAC) and a T2A/250V fuse for the BVM-3011P (220-240 V AC). The appropriate fuse is installed at the factory in accordance with the voltage presetting.

# 1-3. Location and Function of Parts

# 1-3-1. Front Panel



Front panel

#### **1** AUTO SETUP PROBE connector

Connect the optional BKM-2053 auto set-up probe for auto setup operations.

# **2** DEGAUSS switch

When the power is turned on, automatic degaussing is activated.

To demagnetize the screen manually, press this switch momentarily with the power on. When degaussing repeatedly, wait for 5 minutes or more before pressing the switch again.

# **3** SCAN MODE switches

- (underscan): Depress this switch for underscanning. The display size is reduced by approximately 3% so that four corners of the raster are visible.
- (horizontal delay): Depress this switch to observe the horizontal sync signal in the left quarter of the screen. Picture brightness is automatically increased for easy observation.
- (vertical delay): Depress this switch to observe the vertical sync signal. The picture is shifted vertically and the vertical sync signal is displayed near the center of the screen. Picture brightness is automatically increased for easy observation.
- A pulse cross is displayed by depressing both the  $\blacksquare$  and  $\blacksquare$  switches.
- To resume normal scanning, press to release the depressed switches.

# **4** SCREEN switches

The R, G and B switches turn the red, green and blue beams respectively on and off. To turn off the beam, depress the switch. To turn it on again, press to release it.

#### **6** APERTURE switch

Normally keep this switch released. A flat frequency response is obtained.

For aperture correction, depress this switch and adjust the APERTURE control inside the drawer. The boost frequency, 4.5 MHz or 6.5 MHz, can be selected with the aperture selector (S1) on the internal BG board.

With the S1 selector set at the 4.5 MHz position, the frequency response can be adjusted continuously with up to 6 dB boost at 4.5 MHz for subjective enhancement of the displayed picture. With the S1 selector set to the 6.5 MHz position, the frequency response can be adjusted continuously with up to 6 dB boost at 6.5 MHz for compensation of aperture loss of the CRT.

# 6 BLUE ONLY switch

Normally keep this switch released. Depress this switch to turn off the red and green signals. A blue signal is displayed as an apparent monochrome picture on the screen. This facilitates CHROMA and PHASE control adjustments and observation of VTR noise.

#### **7** MONO MODE switch

Normally keep this switch released (AUTO mode). Color or monochrome mode is automatically selected according to the presence or absence of color burst.

Depress the switch to display color pictures in monochrome (MONO mode).

# **3** PHASE MANUAL switch and control

When this switch is in the released position, the subcarrier phase preset with the PRESETS menu operation is obtained.

To adjust the subcarrier phase manually, depress the switch and turn the control.

See "1-4-3. Presetting the Picture Levels."

#### Note

The PHASE MANUAL switch and control are disabled when the SECAM system is selected (the SECAM lamp is lit) with the SYSTEM button in the drawer, or the PAL system is selected (PAL lamp is lit) with selecting PAL D mode (the PAL S/SECAM F/COMB S lamp is not lit).

# **9** CHROMA MANUAL switch and control

When this switch is in the released position, the color saturation preset with the PRESETS menu operation is obtained.

To adjust the color saturation manually, depress the switch and turn the control.

See "1-4-3. Presetting the Picture Levels."

# BRIGHTNESS MANUAL switch and control

When this switch is in the released position, the brightness preset with the PRESETS menu operation is obtained.

To adjust the brightness manually, depress the switch and turn the control.

See "1-4-3. Presetting the Picture Levels."

# **1** CONTRAST MANUAL switch and control

When this switch is in the released position, the contrast preset with the PRESETS menu operation is obtained.

To adjust the contrast manually, depress the switch and turn the control.

See "1-4-3. Presetting the Picture Levels."

# **12** OVERLOAD lamp

Lights to warn of overloading of the CRT.

# **13** MANUAL lamp

Lights when any of the four MANUAL switches **3** through **1** is depressed.

#### **1** INPUT selectors 1 - 4

Select the input signal to be monitored by pressing one of these buttons.

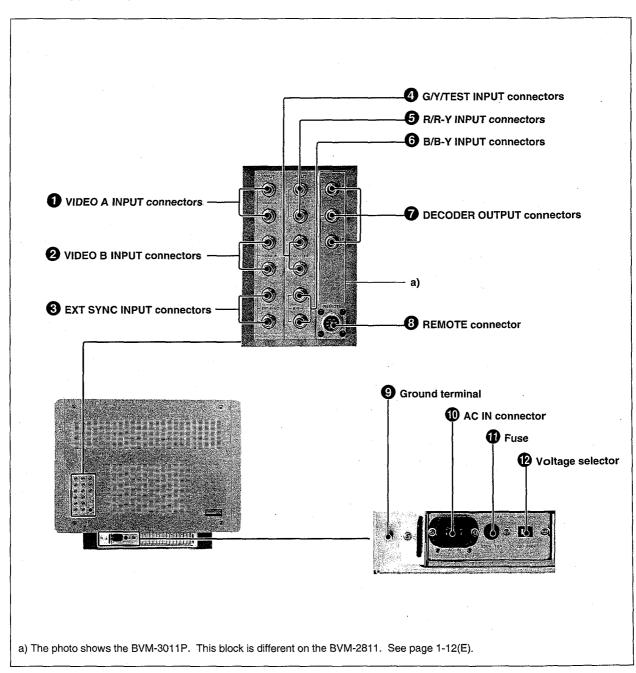
The requirements of the input signals can be set with the CONFIGURATION buttons in the drawer and can be assigned independently to the selectors and stored in memory through the INPU'I' CONFIG menu operation.

See "1-4-2. Setting the Input Configuration."

# **6** POWER switch and lamp

Depress this switch to turn on the power. The lamp lights. To turn it off, press the switch again.

# 1-3-2. Rear Panel



#### Rear panel

# VIDEO A INPUT connectors (BNC)VIDEO B INPUT connectors (BNC)

Input composite video signals.

Use one connector of each pair for input and the other for loop-through output.

When the loop-through output is not used, attach a 75-ohm terminator.

# **3** EXT SYNC INPUT (external sync input) connectors (BNC)

Input a sync signal.

Use one connector for input and the other for loop-through output.

When the loop-through output is not used, attach a 75-ohm terminator.

# **4** G/Y/TEST INPUT connectors (BNC)

# **5** R/R-Y INPUT connectors (BNC)

## **6** B/B-Y INPUT connectors (BNC)

Input RGB video signals, component signals or a composite test signal. The signal format can be selected with the FORMAT button in the drawer. Use one connector of each pair for input and the other for loop-through output.

When the loop-through output is not used, attach a 75-ohm terminator.

# **7** DECODER OUTPUT connectors (BNC) (BVM-3011P only)

Output RGB or component (Y, R-Y, B-Y) outputs decoded from the composite (VIDEO A, VIDEO B or TEST) or component signals being displayed on the screen with the BKM-1440 RGB/component adaptor installed.

The RGB or component outputs are selected with the S1 selector on the BF board of the BKM-1440 kit.

To provide RGB output, set the S1 selector to the upper position.

To provide component output, set it to the lower position.

#### Notes

- The DECODER OUTPUT connectors do not provide the correct RGB outputs when RGB signals are displayed on the screen. To obtain the correct RGB outputs, use the loop-through outputs of the R, G and B INPUT connectors.
- The outputs obtained from noncomposite signals are also noncomposite. Supply a sync signal from the EXT SYNC INPUT connector when required.
- The output signals are affected by the CHROMA, PHASE and APERTURE controls and MATRIX switch.
- The color killer circuit is not activated for output signals.

## **8** REMOTE connector (10-pin)

Connect to an external control device using the supplied 10-pin connecter.

To enter remote control mode, press the LOCAL/REMOTE button in the drawer so that the associated lamp lights.

The input mode and the pin assignment can be set through the REMOTE menu operation.

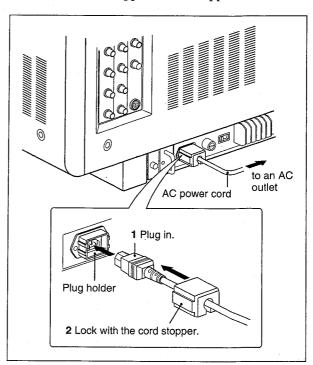
See "1-4-6. Assigning the Remote Control Functions."

#### **9** Ground terminal

Connect to the system ground, when required.

#### **1** AC IN connector

Connect the supplied AC power cord here and secure it with the supplied cord stopper.



#### NOTICE

THIS NOTICE IS APPLICABLE FOR THE USA ONLY.

If shipped to the USA, use the UL LISTED power cord specified below for 220 - 240 V AC operation.

#### DO NOT USE ANY OTHER POWER CORD.

Plug cap
Cord
Tandem blade with ground pin
Type SJT, three 16 or 18 AWG
Wires

Length Maximum 15 feet

Rating Minimum 10 A, 250 V AC

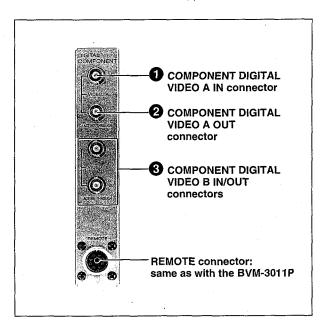
#### **1** Fuse

Use a 4A fuse for the BVM-2811 or a T2A fuse for the BVM-3011P.

#### **1** Voltage selector

Set to 100-120 V AC for the BVM-2811 or 220-240 V AC for the BVM-3011P.

#### Connectors available only on the BVM-2811



# **1** COMPONENT DIGITAL VIDEO A IN connector (BNC)

Inputs a D-1 format serial video signal using a coaxial cable.

# **2** COMPONENT DIGITAL VIDEO A OUT connector (BNC)

Outputs active-through output signal (signal which is compensated for signal deterioration due to cable loss, etc.) of the signal supplied to the VIDEO A IN connector.

As this active-through output is driven by the power of this monitor, the signal is not output when the power is off.

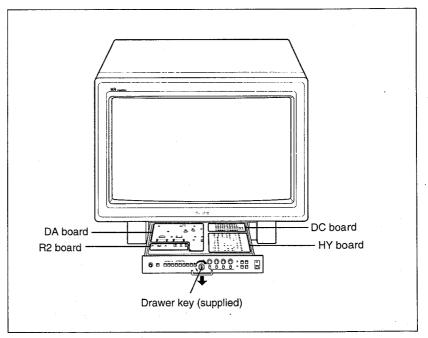
## **3** COMPONENT DIGITAL VIDEO B IN/ OUT connectors (BNC)

These are another set of the input and the active-through output of a D-1 format serial video signal.

### 1-3-3. Subcontrol Panels inside the Drawer

Insert the supplied drawer key into the keyhole of the drawer lock, turn it 90° clockwise and pull the drawer out.

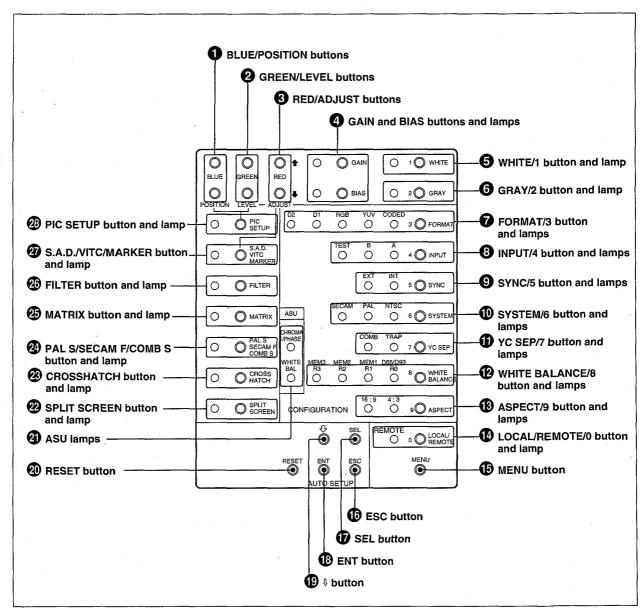
Adjust the button and controls on the subcontrol panels when the monitor is fully warmed up. Warm-up time will be at least 30 minutes after the power has been turned on.



Subcontrol panels

For turning the controls on the DA, DC and R2 boards, use the supplied screwdriver.

# HY board (input configuration, menu and auto setup operation section)



HY board

#### BLUE/POSITION buttons

When adjusting white balance (the GAIN or BIAS lamp is lit), use these buttons to adjust the blue signal.

When adjusting the black level (the PIC SETUP lamp is lit), use them to adjust the position of the input signal checking zone.

#### **2** GREEN/LEVEL buttons

When adjusting white balance (the GAIN or BIAS lamp is lit), use these buttons to adjust the green signal.

When adjusting the black level (the PIC SETUP lamp is lit), use them to adjust the brightness of the black reference area.

#### **3** RED/ADJUST buttons

When adjusting white balance (the GAIN or BIAS lamp is lit), use these buttons to adjust the red signal.

When the safe area is displayed (the S.A.D./VITC/MARKER lamp is lit), use them to adjust the safe area size. When the VITC is displayed, use them to control the VITC hold function.

# **4** GAIN and BIAS buttons and lamps

When adjusting the white balance, select the adjustment items.

**BIAS:** Adjust the white balance at the lowlight and brightness of the screen.

**GAIN:** Adjust the white balance at the highlight and contrast of the screen.

For the adjustments, use the BLUE/POSITION, GREEN/LEVEL and RED/ADJUST buttons.

#### **6** WHITE/1 button<sup>1)</sup> and lamp

When adjusting the white balance at the highlight, or when adjusting the beam landing, press this button so that the lamp lights. The internal 100% white signal is displayed on the screen. To turn off the signal, press the button again.

# **6** GRAY/2 button<sup>1)</sup> and lamp

When adjusting the white balance at the lowlight, press this button so that the lamp lights. The internal gray signal is displayed on the screen. To turn off the signal, press the button again.

#### **7** FORMAT/3 button<sup>1)</sup> and lamps

Select the signal format according to the signal to be monitored. Press this button so that the lamp of the appropriate format lights.

**CODED:** For monitoring NTSC, PAL or SECAM signal with the decoder board (BC, BD, BE or BM) installed.

**YUV:** For monitoring Y/R-Y/B-Y component signals.

RGB: For monitoring RGB signals.

- **D-1:** For monitoring D-1 format component signals (effective only when the BKM-2085-20 is installed).
- **D-2:** For monitoring a D-2 format composite signal (effective only when the BKM-2090-20 is installed).

# **3** INPUT/4 button<sup>1)</sup> and lamps

When monitoring a composite signal, select the input connector.

Press this button so that the lamp of the appropriate connector lights.

- **A:** For monitoring the signal connected to the VIDEO A INPUT connector.
- **B:** For monitoring the signal connected to the VIDEO B INPUT connector.
- **TEST:** For monitoring the test signal connected to the G/Y/TEST connector.

### **9**SYNC/5 button<sup>1)</sup> and lamps

Select the sync mode. Press this button so that the lamp of the appropriate mode lights.

- **INT (internal sync mode):** The unit operates in synchronization with the sync signal of the composite signal being displayed on the screen.
- **EXT** (external sync mode): The unit operates in synchronization with the sync signal supplied from the EXT SYNC INPUT connector.

## SYSTEM/6 button<sup>1)</sup> and lamps

When monitoring a composite signal or a signal decoded with a decoder board (BC, BD, BE or BM), select the color system according to the signal to be monitored. Press this button so that the lamp of the appropriate system lights.

NTSC: For monitoring a signal of the NTSC color system.

**PAL:** For monitoring a signal of the PAL color system.

**SECAM:** For monitoring a signal of the SECAM color system.

#### Note

If the decoder board for the selected color system has not been installed:

- The picture does not appear when the FILTER lamp is lit (FILTER ON).
- The picture is displayed in monochrome when the FILTER lamp is not lit (FILTER OFF).

<sup>1)</sup> These buttons also function as numeric keys when specifying the password.

See "1-4-5. Changing and Applying the Password."

# **1)** YC SEP(Y/C separation filter)/7 button<sup>1)</sup> and lamps

For NTSC or PAL signal, select the filter to be used for Y/C separation. Press the button so that the lamp of the appropriate filter lights.

**COMB:** To use the comb filter with the comb filter board (BT) installed.

TRAP: To use the built-in trap filter.

#### Note

When the appropriate comb filter board has not been installed, the trap filter is activated regardless of the setting with this button.

# **WHITE BALANCE/8 button<sup>1)</sup> and lamps**

Select the white balance and picture levels stored in the respective registers. Press this button so that the lamp of the appropriate register lights.

At the factory, the white balance for D65 has been stored in all the registers.

**D65/D93 R0:** To use the white balance and picture levels stored in register 0.

**MEM 1 R1:** To use the white balance and picture levels stored in register 1.

**MEM 2 R2:** To use the white balance and picture levels stored in register 2.

**MEM 3 R3:** To use the white balance and picture levels stored in register 3.

For details, see "1-4. Menu Operations."

#### (BASPECT/9 button<sup>1)</sup> and lamps

Select the aspect ratio of the picture to be monitored. Press this button so that the lamp of the appropriate ratio lights.

**16:9:** For the 16:9 aspect. **4:3:** For the 4:3 aspect

#### Note

In the 4:3-aspect mode, the picture on the screen will be underscanned by 3%.

# ♠ LOCAL/REMOTE/0 button¹¹ and lamp

To enable the monitor to be controlled from an external control device connected to the REMOTE connector on the rear panel, press this button so that the lamp lights (REMOTE mode). To disable the remote control (LOCAL mode), press the button again.

For the remote control functions, see "1-4-6. Assigning the Remote Control Functions."

#### **1** MENU button

Press to initiate menu operations. The initial menu is displayed.

#### **16** ESC (escape) button

Press to quit menu or auto setup operations.

#### **T** SEL (select) button

Press to set the monitor to color temperature selection mode in auto setup operations. In color analyzer mode, select the memory position of the probe connected to the AUTO SETUP PROBE connector.

For details, refer to the operation and maintenance manual of the BKM-2056 auto set-up adaptor.

#### **B** ENT (enter) button

Press to proceed to the next step during menu or auto setup operation and save the data.

#### **19** ♦ (cursor) button

For selecting menu options displayed on the screen in menu or auto setup operations. Each time this button is pressed, the cursor moves downwards and, if at the bottom, jumps to the top.

#### **20** RESET button

Press to reset an auto setup operation.

See "1-4-5. Changing and Applying the Password."

<sup>1)</sup> These buttons also function as numeric keys when specifying the password.

## **a** ASU (automatic setup) lamps

CHROMA/PHASE: Lights when the automatic chroma and phase adjustment is completed with AUTO CHROMA/PHASE in auto setup operations. The lamp goes off when MANUAL is selected on the SELECT MONITOR MEM menu in auto setup operations.

WHITE BAL: Lights when one of the color temperature to be transferred to the monitor by the auto white balance adjustment is selected on the SELECT MONITOR MEM menu in auto setup operations. When this lamp is lit, the color temperature selection on the SELECT MONITOR MEM menu can be performed using the WHITE BALANCE/8 button.

# **2** SPLIT SCREEN button and lamp

To display the lower half of the picture in monochrome mode, press this button so that the lamp lights. Press this button again to resume the normal picture.

#### **②** CROSSHATCH button and lamp

To display the internal crosshatch pattern for convergence adjustment, press this button so that the lamp lights.

The crosshatch pattern is synchronized with the selected composite sync signal.

To turn off the pattern, press the button again.

# **②** PAL S/SECAM F/COMB S button and lamp While monitoring a PAL signal, the

demodulation mode of the the PAL system can be switched. When this button is pressed and the lamp lights, S (simple) mode is selected. By pressing the button to turn off the lamp, D (deluxe) mode is selected.

While monitoring a SECAM signal, the ID signal of the the SECAM system can be switched. When this button is pressed and the lamp lights, the F (field) signal is selected. By pressing the button to turn off the lamp, the L (line) signal is selected.

When the BKM-1412 NTSC comb filter is activated, the comb filter mode can be switched. When this button is pressed and the lamp lights, the S (simple) comb filter is selected. By pressing the button to turn off the lamp, the D (dynamic) comb filter is selected.

#### 25 MATRIX button and lamp

Should normally be OFF (lamp not lit). By pressing this button so that the lamp lights (ON), the matrix circuit is activated and the chromaticity of the displayed picture more closely approximates to that of "true" NTSC phosphors. To turn off the matrix circuit, press the button again.

#### **26** FILTER button and lamp

To activate the comb or trap filter (selected with the YC SEP button) in MONO mode (MONO MODE switch on the front panel depressed), press this button so that the lamp lights. To deactivate the filter for a wider frequency range, press the button again.

#### Note

In AUTO mode (the MONO MODE switch released), the filter is always activated for color signals regardless of the setting with this button.

# **3** S.A.D. (safe area display)/VITC/MARKER button and lamp

When the BQ board (BKM-1470 safe area display) is installed, the safe area display can be turned on and off.

When the BL board (BKM-1460 VITC adaptor) has been installed, the VITC display can be turned on and off.

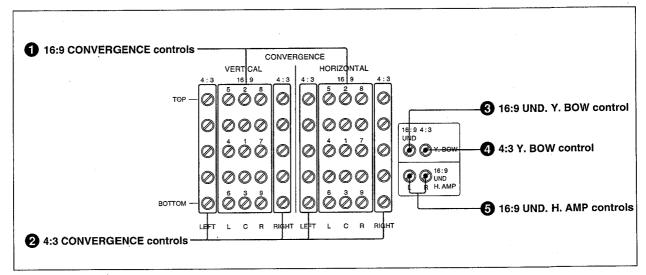
# **23** PIC SETUP (picture setup) button and lamp

Use to match the black reference of the monitor with the black level of the input signal to be monitored.

By pressing this button so that the lamp lights, a vertical picture band and the black reference of the monitor are displayed on the screen for easy level comparison.

See "1-7-2. Black Level Adjustment."

#### DC board (Convergence adjustment section)



DC board

#### 16:9 CONVERGENCE controls

Adjust the convergence of the 16:9-aspect normal picture. The VERTICAL controls adjust the convergence vertically and the HORIZONTAL controls adjust it horizontally. Fifteen controls cover the entire screen so that each control adjusts the corresponding portion of the screen. See "1-6. Convergence Adjustments."

#### **2** 4:3 CONVERGENCE controls

Adjust the convergence of the 4:3-aspect picture at the right and left portions of the screen after adjusting it at the center of the picture using the C (center) column 16:9 CONVERGENCE controls. The VERTICAL controls adjust the convergence vertically and the HORIZONTAL controls adjust it horizontally.

See "1-6-3. Convergence of a 16:9-Aspect Picture."

#### 3 16:9 UND. Y. BOW (underscan Y bow) control

Adjust the horizontal convergence at the top and bottom of the center of the 16:9-aspect underscanned picture.

See "1-6-2. Convergence of a 16:9-Aspect Underscanned Picture."

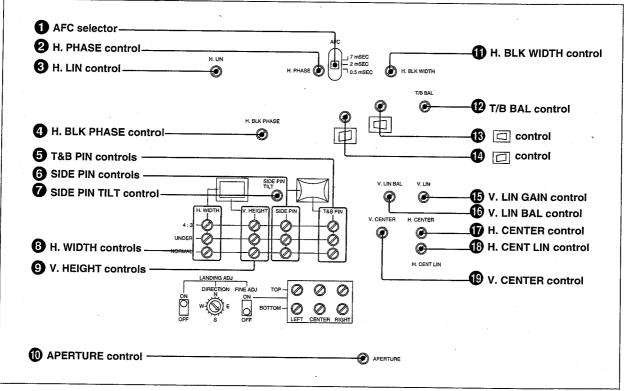
#### 4:3 Y. BOW control

Adjust the horizontal convergence at the top and bottom of the center of the 4:3-aspect picture. See "1-6-3. Convergence of a 4:3-Aspect Picture."

### 6 16:9 UND. H. AMP (underscan horizontal amplifier) controls

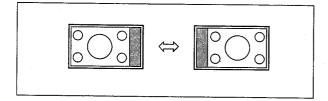
Adjust the horizontal convergence of the underscanned picture of the 16:9-aspect. See "1-6-2. Convergence of a 16:9-Aspect Underscanned Picture."

## DA board (H.V. oscillator section)

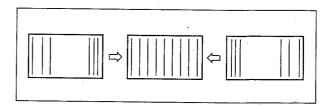


DA board

- **1** AFC (automatic frequency control) selector Select the AFC time constant.
- **0.5 mSEC** (fast): This mode is fast enough to compensate for VTR jitter. Set to this position to obtain a stable playback picture from a VTR.
- 2 mSEC (normal): Normally set to this position.
  7 mSEC (slow): This mode is slow enough to display the time base instability introduced by mechanical jitter in the VTR playback signal.
- **2** H. PHASE (horizontal phase) control Adjust the horizontal position of the picture.

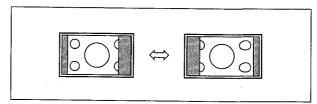


# **3** H. LIN (horizontal linearity) control Adjust the horizontal linearity of the picture.



# 4 H. BLK PHASE (horizontal blanking phase). control

Adjust the phase of the horizontal blanking at both sides of the screen.



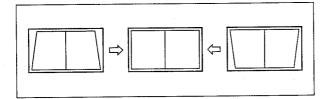
# **5** T&B PIN (top and bottom pincushion) distortion controls

Correct the top and bottom pincushion distortion. Use the NORMAL control for the 16:9-aspect normal picture, the UNDER control for the 16:9-aspect underscanned picture and the 4:3 control for the 4:3-aspect picture.

# **6** SIDE PIN (pincushion) controls

Correct the side pincushion distortion. Use the NORMAL control for the 16:9-aspect normal picture, the UNDER control for the 16:9-aspect underscanned picture and the 4:3 control for the 4:3-aspect picture.

**7** SIDE PIN TILT (side pincushion tilt) control Adjust the phase of the side pincushion distortion.



# **3** H. WIDTH (horizontal width) controls

Adjust the horizontal width of the picture. Use the NORMAL control for the 16:9-aspect normal picture, the UNDER control for the 16:9-aspect underscanned picture and the 4:3 control for the 4:3-aspect picture.

## 9 V. HEIGHT (vertical height) controls

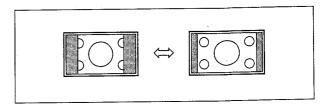
Adjust the height of the picture. Use the NORMAL control for the 16:9-aspect normal picture, the UNDER control for the 16:9-aspect underscanned picture and the 4:3 control for the 4:3-aspect picture.

#### **10** APERTURE control

Adjust the frequency response when the APERTURE switch on the front panel is depressed.

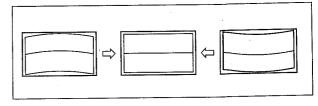
# H. BLK WIDTH (horizontal blanking width) control

Adjust the width of the horizontal blanking.



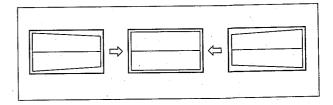
# T/B BAL (top and bottom pincushion balance) control

Adjust the distortion at the center (X axis) of the picture.



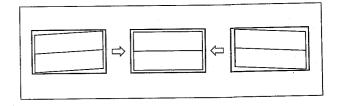
# (trapezoid distortion) control

Correct the horizontal trapezoid distortion.



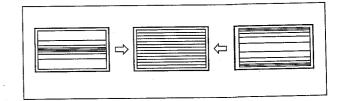
# (parallelogram distortion) control

Correct the right angled distortion of the deflection yoke.



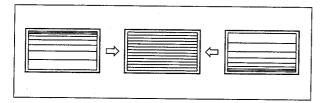
# (5) V. LIN (vertical linearity gain) control

Adjust the vertical linearity of the picture.



#### **6** V. LIN BAL (vertical linearity balance) control

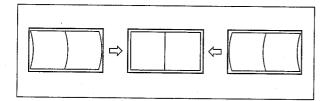
Adjust the balance of the vertical (Y axis) linearity of the picture.



# **7** H. CENTER (horizontal centering) control Adjust the horizontal position of the picture.

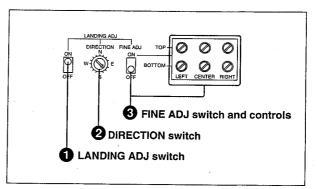
## (B) H. CENT LIN (horizontal centering linearity) control

Adjust the horizontal linearity at the center of the picture.



**19** V. CENTER (vertical centering) control Adjust the vertical position of the picture.

# R2 Board (Beam landing correction section)



R2 board

# 1 LANDING ADJ (landing adjustment) switch Turns on and off the beam landing correction circuit. Normally set the switch to ON.

#### **2** DIRECTION switch

Activates when the LANDING ADJ switch is set to ON. To correct the beam mislanding caused by terrestrial magnetism and eliminate color impurity on the screen, set the arrow on the switch to the direction the picture tube faces.

#### 3 FINE ADJ (fine-adjustment) switch and controls

Normally set the switch to OFF.

If color impurity on the screen cannot be completely eliminated through the adjustment with the DIRECTION switch, set this switch to ON and adjust the controls.

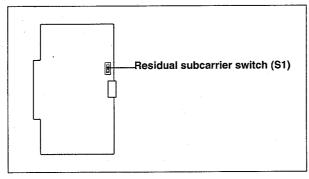
The indications of the six controls correspond to the portion of the screen.

See "1-5. Beam Landing Correction."

#### 1-3-4. Switches inside the Cabinet

To access to the switches on the boards inside the cabinet, see Section 2.

#### **BJ** board



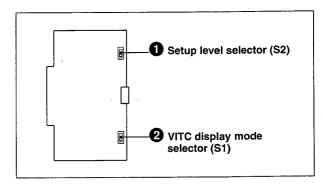
BJ board

### Residual subcarrier switch (S1)

This switch is factory-preset to the lower position (OFF).

Normally there will be no residual subcarrier in input video signals. However, if a residual subcarrier is present, this may affect the display. Set this switch to the upper position (ON) to check if a residual subcarrier is present. If it is present in the incoming signal, color shift appears in the picture.

#### **BH** board



BH board

#### 1 Setup level selector (S2)

Select the setup level.

**0 IRE:** The setup level is 0%.

AUTO: Factory-preset position. The setup level set through the COMPONENT OFFSET or NTSC OFFSET option of the MONITOR CONFIG menu is obtained.

See "1-4-7. Defining the Monitor Configuration." **7.5 IRE:** The setup level is 7.5%.

The 0% setup levels can be varied with the RV1 control and 7.5% level with the RV2 control in a range from -2.5% through +12.5%.

#### **2** VITC display mode selector (S1)

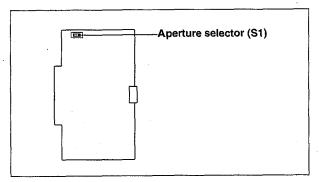
Use to invert the character and background colors for VITC display.

**Upper position:** Factory-preset position. The VITC is displayed in white characters on a black background.

**Lower position:** The VITC is displayed in black characters on a white background.

For details, see the operation and maintenance manual of the BKM-1460 VITC adaptor.

#### **BG** board

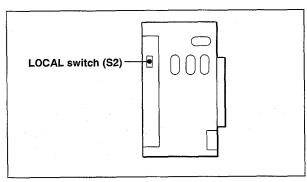


BG board

#### Aperture selector (S1).

Select the boost frequency, 4.5 MHz or 6.5 MHz, for aperture correction. This selector is factory-preset to 4.5 MHz.

## BV board (BVM-2811 only)



BV board

#### LOCAL switch (S2)

Set this switch to the color system to be used for monitoring digital video signals.

**Upper position:** NTSC **Center position:** PAL

Lower position: SECAM (Factory-set position)

#### Note

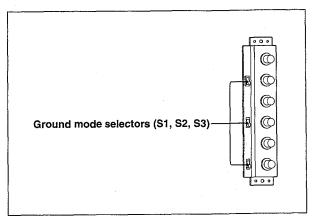
The decoder board selected with this switch cannot be used simultaneously with the D-1 boards (BKM-2085-20).

When you change the setting of this switch, be sure to change the "D1 CONFIGURATION" setting of the MONITOR CONFIG menu to the same system.

See "1-4-7. Defining the Monitor Configuration."

#### QA and QB boards

The QA board is located behind the VIDEO A, VIDEO B and EXT SYNC INPUT connector panel and the QB board is located behind the R/R-Y, G/Y/TEST and B/B-Y INPUT connector panel. To access these boards, remove the INPUT connector panels, referring to Section 2.



QA and QB boards

#### Ground mode selectors (S1, S2, S3)

The selectors on the QA board correspond to the VIDEO A, VIDEO B or EXT SYNC INPUT connectors and those on the QB board correspond to the R/R-Y, G/Y/TEST or B/B-Y connectors, respectively.

S (nonfloating): Factory-preset position.

Normally keep the selectors at this position.

**F** (**floating**): When there is hum in the input signal to be monitored, set to this position. Common mode noise will be rejected.

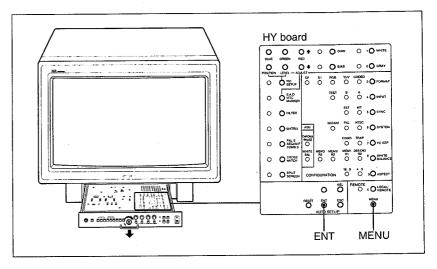


# 1-4. Menu Operations

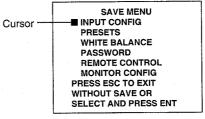
The menu operations permit the various monitor requirements to easily be set by following messages displayed on the screen.

# 1-4-1. Starting with the Menu Operations

For the menu operations, use the buttons on the HY board in the drawer and some switches and controls on the front panel.



Pressing the MENU button displays the following initial menu showing the items which can be set through the menu operations.



Initial menu

INPUT CONFIG (input configuration): To assign input signals to INPUT selectors 1 to 4 on the front panel.

PRESETS: To adjust the preset values for the phase, chroma, contrast, brightness, and picture setup (black reference) levels.

WHITE BALANCE: To adjust the white balance.

PASSWORD: To specify and activate/deactivate the password. **REMOTE CONTROL:** To assign the remote control functions. MONITOR CONFIG (monitor configuration): To specify operating conditions of the monitor, such as the optional boards to be used and signal setup levels, and to restore the factory-set menu data.

### To select a menu option

Move the cursor with the D button to the line of the desired menu option and press the ENT button.

Pressing the D button moves the cursor downward and, if at the bottom, to the top.

# To cancel the menu operation on the way

Press the ESC button.

At any level of the menu operations, pressing the ESC button cancels the operations without changing any data and restores normal status.

# 1-4-2. Setting the Input Configuration

At the factory, the following input signals are assigned to INPUT selectors 1 to 4 on the front panel.

Factory-set configuration for the BVM-2811

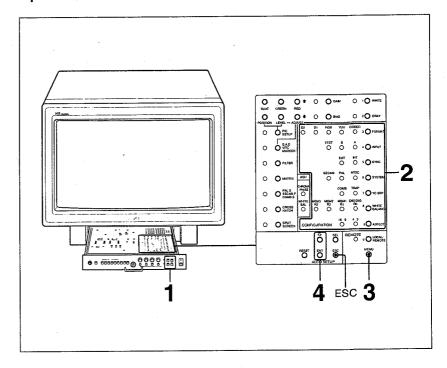
	INPUT selectors				
	1	2	3	4	
FORMAT	D-1	D-1	YUV	CODED	
INPUT	Α	В	_	Α	
SYNC	INT	INT	INT	INT	
SYSTEM	_	<del></del> .	<u> </u>	NTSC	
ASPECT	16 : 9	16:9	16:9	16:9	
YC SEP	_		· <del></del> · ·	СОМВ	

Factory-set configuration for the BVM-3011P

		selectors			
	1	2	3	4	
FORMAT	CODED	CODED	COMPONENT	RGB	
INPUT	Α	В			
SYNC	INT	INT	INT ·	INT	
SYSTEM	PAL	PAL	_		
ASPECT	16:9	16:9	16:9	16:9	
YC SEP	TRAP	TRAP	_		

Using the CONFIGURATION buttons on the HY board in the drawer, these requirements of the input signals (input configuration) can be changed as desired and stored in memory through the INPUT CONFIG menu operation. The stored configuration is always obtained when the assigned INPUT selector is pressed. When the change is not stored through the menu operation, the input configuration returns to the previous status when another INPUT selector is pressed. 1. Operation

### Operation



- **1** Press one of the INPUT selectors on the front panel.
- **2** Using the following COFIGURATION buttons in the drawer, set the input configuration for the INPUT selector selected in step 1. Press the buttons so that the appropriate lamps light.

**FORMAT**<sup>1)</sup>: Select the signal format (CODED, YUV, RGB, D-1 or D-2).

**INPUT:** Select the input connector A, B or TEST when you select CODED for FORMAT, or A or B when you select D-1 or D-2 for FORMAT.

**SYNC:** Select the sync mode (INT or EXT).

**SYSTEM**<sup>1)</sup>: Select the color system (NTSC, PAL or SECAM) when you select CODED or D-2 for FORMAT.

YC SEP<sup>1</sup>): Select the filter when you select NTSC or PAL for the color system.

WHITE BALANCE: Select the register (R0, R1, R2 or R3) on which the desired white balance has been stored.

See "I-4-4. Selecting the White Balance."

**ASPECT:** Select the picture aspect (4:3 or 16:9).

See "1-4-7. Defining the Monitor Configuration."

<sup>1)</sup> For these menu items, you can select only the options for which the corresponding internal boards have been set to YES in OPTION INSTALLATION of the MONITOR CONFIG menu.

- **3** When the settings are completed, press the MENU button. The initial menu is displayed.
- 4 Should the cursor on the initial menu not be located at INPUT CONFIG, press the D button until it returns to INPUT CONFIG, and press the ENT button.

### Note

If the message "PLEASE ENTER PASSWORD" is displayed, enter the password.

See "1-4-5. Changing and Applying the Password."

The input configuration set in step 2 for the INPUT selector selected in step 1 is now stored in memory.

The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

Repeat this procedure for the other INPUT selectors as desired.

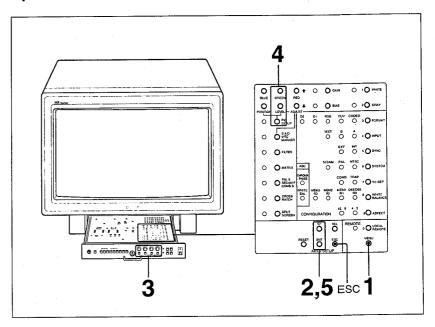
#### To cancel the operation

Press the ESC button before pressing the ENT button in step 4.

# 1-4-3. Presetting the Picture Levels

The four sets of the phase, chroma, brightness, contrast, and picture setup (black reference) levels can be set and stored in Registers R0 to R3 through the PRESETS menu operation.

#### Operation



- 1 Press the MENU button.
  The initial menu is displayed.
- **2** Press the D button until the cursor reaches PRESETS, then press the ENT button.

The SAVE PRESETS menu is displayed.

SAVE PRESETS

TEXT ON/OFF

DATA REGISTER R0 \*

DATA REGISTER R1

DATA REGISTER R2

DATA REGISTER R3

PHASE 100 BRIGHT 100

CHROMA 100 CONTRAST 100

PICTURE SETUP LEVEL 100

SELECT AND PRESS ENT

An asterisk indicates the register which is currently selected with the WHITE BALANCE button. The levels stored in this register are displayed as numerical values on the lower half of the menu display.

#### Note

If the message "PLEASE ENTER PASSWORD" is displayed, enter the password.

See "1-4-5. Changing and Applying the Password."

- **3** Depress the PHASE, CHROMA, BRIGHTNESS and CONTRAST MANUAL switches and turn the respective controls so that the desired levels are obtained.
- Press the PIC SETUP button so that the associated lamp lights and adjust the setup level for the picture by pressing the LEVEL buttons.

# Note

The adjustments in steps 3 and 4 can be precisely performed while observing the numeric level indications (0 through 200, centering with 100) on the lower half of the menu display.

To adjust while observing the picture on the screen, set the cursor to TEXT ON/OFF and press the ENT button, and the SAVE PRESETS menu disappears.

For the picture setup level, follow the procedure in "1-7-2. Black Level Adjustment."

To return to the SAVE PRESETS menu, press the ENT button again.

Move the cursor to the register in which the set levels are to be stored and press the ENT button.

The levels set in steps 3 and 4 are now stored in the register selected in

The message "DATA SAVED" is momentarily displayed, and the monitor returns to normal status.

Repeat this procedure for the other registers as desired.

# To cancel the operation

Press the ESC button before pressing the ENT button in step 5.

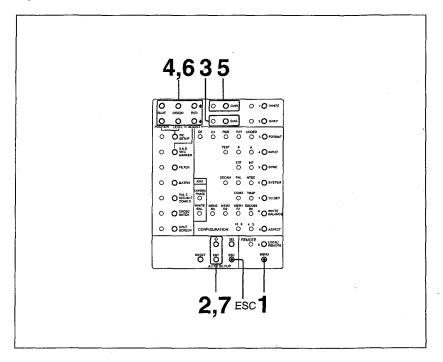
# 1-4-4. Selecting the White Balance

The four settings for white balance can be stored in Registers R0 to R3. At the factory, the setting for D65 has been stored in all the registers

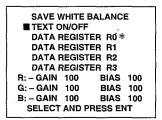
#### Note

The settings for white balance are stored in combination with the picture levels set through the PRESETS menu operation in the same Registers R0 through R3.

### Operation



- **1** Press the MENU button. The initial menu is displayed.
- Press the D button until the cursor reaches WHITE BALANCE, then press the ENT button. The SAVE WHITE BALANCE menu is displayed.



An asterisk indicates the register which is currently selected with the WHITE BALANCE button. The levels stored in this register are displayed as numerical values on the lower half of the menu display.

#### Note

If the message "PLEASE ENTER PASSWORD" is displayed, enter the password.

See "1-4-5. Changing and Applying the Password."

- **3** Press the BIAS button. The associated lamp lights.
- **4** Adjust the R, G and B bias levels by pressing the RED, GREEN and BLUE buttons.
- **5** Press the GAIN button. The associated lamp lights.
- 6 Adjust the R, G and B signal gain levels by pressing the RED, GREEN and BLUE buttons.

#### Note

These adjustments in steps 3 through 6 can be precisely performed while observing the numeric level indications (0 through 200, centering with 100) on the lower half of the menu display.

**To adjust while observing the picture on the screen,** set the cursor to TEXT ON/OFF and press the ENT button, and the SAVE WHITE BALANCE menu disappears.

Then, adjust the white balance by following the procedure in "1-7-1. White Balance Adjustment."

To return to the SAVE WHITE BALANCE menu, press the ENT button again.

**7** Move the cursor to the register in which the set white balance is to be stored and press the ENT button.

The white balance set in steps 3 through 6 is now stored in the register selected in step 7.

The message "DATA SAVED" is momentarily displayed, and the monitor returns to normal status.

Repeat the above procedure for the other registers as desired.

#### To cancel the operation

Press the ESC button before pressing the ENT button in step 7.



# 1-4-5. Changing and Applying the Password

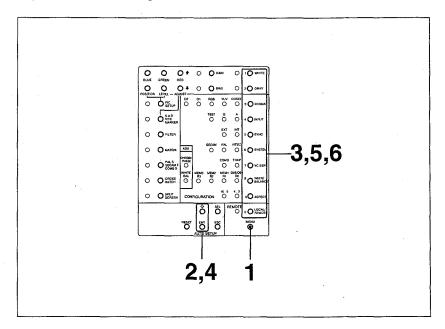
The password can be specified and applied to the desired menu option to prohibit the menu settings from being changed without permission. The password can be any desired four-digit number, which is entered by using the function buttons having additional numeric indications on the HY board.

The message "PLEASE ENTER PASSWORD" is displayed when you try to select the options for which the password has been applied, from the initial menu.

If an incorrect password is entered or the password is not entered within about 5 seconds after the above message is displayed, the message "INCORRECT ENTRY" is momentarily displayed and the menu operation is canceled.

#### To change the password

"9999" has been specified for the password at the factory. Change it to your desired four-digit number as follows.



Press the MENU button. The initial menu is displayed.

## 1-4-6. Assigning the Remote Control Functions

The remote control function is available either in STANDARD PARALLEL or CONFIGURE PARALLEL mode.

The mode change is achieved through the REMOTE CONTROL menu operation.

The SERIAL REMOTE option mode in the REMOTE CONTROL menu is provided for future use. If you inadvertently select it, cancel the REMOTE CONTROL menu by pressing the ESC button.

#### STANDARD PARALLEL mode

The remote control function is set to the STANDARD PARALLEL mode and the following functions are assigned to the pins of the REMOTE connector at the factory.



Pin assignment

10 m 100 m	Function	The state of the same of the s			I	Pin No	).		
INPUT	SYNC	MODE	1	2	3	4	5	6	7
	INT	AUTO	0	0	_	0	_	-	_
		MONO	S	0	_	0	ı —		_
_ ^	A EXT	AUTO	0	0	_	S			_
		MONO	S	0	_	S	-	_	_
	INT	AUTO	0	S	_	0	_		_
В	ļ.	MONO	S	S	-	0	-	_	
0	EXT	AUTO	0	S	_	S	· –	_	_
		МОМО	S	S	_	S	_	_	
VITC OFF			_	_	_	_		S	_
VITC HOLD	)		-	-	-	-	-	0	s ·
TALLY ON			_	_	S	_		_	_

S: Short-circuit with pin No.8

O: Open

-: Either S or O

The assigned function can be controlled by short-circuiting the corresponding pin with pin 8.

Note that pin 3 is fixed to TALLY and pin 8 is fixed to GND.

The remote control operations have priority over the respective buttons and switches of the monitor.

#### **CONFIGURE PARALLEL mode**

The functions of the buttons or switches on the front panel or in the drawer listed below can be assigned to pins 1, 2 and 4 through 7, as desired.

#### Front panel

INPUT selectors 2 to 4 (input selection) MONO MODE switch (AUTO/MONO mode switching)

#### HY board inside the drawer

WHITE button (ON/OFF)

GRAY button (ON/OFF)

SYNC button (INT/EXT sync mode switching)

YC SEP button (COMB/TRAP filter switching)

ASPECT button (16:9/4:3 picture aspect switching)

S.A.D. /VITC/MARKER button (S.A.D. or VITC ON/OFF)

FILTER button (ON/OFF)

MATRIX button (ON/OFF)

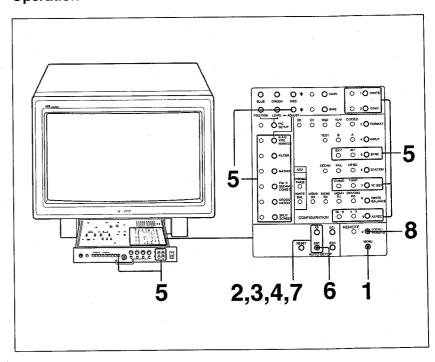
PAL S/SECAM F/COMB S button (mode or type switching)

CROSSHATCH button (ON/OFF)

SPLIT SCREEN button (ON/OFF)

ADJUST button (S.A.D. size adjusting or VITC holding)

# Operation



Press the MENU button to display the initial menu.

**2** Move the cursor to REMOTE CONTROL and press the ENT button.

The REMOTE CONTROL MENU is displayed.

REMOTE CONTROL MENU

■ SERIAL REMOTE STANDARD PARALLEL \* CONFIGURE PARALLEL

SELECT AND PRESS ENT

The asterisk indicates the current setting. Note that SERIAL REMOTE is for future use.

**3** To change the pin assignment of the REMOTE connector, move the cursor to CONFIGURE PARALLEL and press the ENT button.

To resume the factory-set pin assignment, move the cursor to STANDARD PARALLEL and press the ENT button. (For the factory-set pin assignment, see page 1-35(E).)

#### Note

When using STANDARD PARALLEL or CONFIGURE PARALLEL mode, the 8-pin connector must be connected to HY-4 of the HY board in the drawer. Although it must have been done at the factory, make sure that the connector is connected to HY-4 properly. If not, remove the connector from HY-2 and connect it to HY-4.

When STANDARD PARALLEL has been selected, the selected mode is now activated and the monitor returns to normal status. When CONFIGURE PARALLEL has been selected, the CONFIG PARALLEL REMOTE menu is displayed.

CONFIG PARALLEL REMOTE

PIN 1 MONO

PIN 2 ASPECT

PIN 4 SYNC

PIN 5 INPUT SEL 2/1

PIN 6 INPUT SEL 3/1

PIN 7 INPUT SEL 4/1

SAVE AND APPLY

PIN 3 TALLY PIN 8 GND

SELECT AND PRESS ENT

**4** Move the cursor with the ∮ button to the pin whose assignment is to be changed, then press the ENT button. The following message appears.

#### **CONFIG PARALLEL REMOTE**

PLEASE SELECT FUNCTION TO BE APPLIED TO PIN AND PRESS ENT

- **5** Press the button on the front panel or in the drawer (listed on page 1-36(E)) whose function is to be assigned to the pin selected in step 4.
- **6** Press the ENT button.

Repeat steps 4, 5 and 6 for the other pins as desired.

- When the pin assignment is completed, move the cursor to SAVE AND APPLY and press the ENT button.
  The massage "DATA SAVED" is momentarily displayed, and the monitor returns to normal status.
- **8** Press the LOCAL/REMOTE button so that the REMOTE lamp lights, setting the monitor to the remote control mode.

#### To cancel the operation

Press the ESC button before pressing the ENT button in step 7.

#### Notes

- When the INPUT selector 2, 3 or 4 is assigned to one of the REMOTE connector pins through CONFIGURE PARALLEL, the input signal for the assigned INPUT selector is selected by short-circuiting the pin to GND. In open status, the input signal of the INPUT selector 1 is selected.
- When two or more INPUT selectors are assigned to the REMOTE connector pins, be sure not to simultaneously short-circuit these pins to GND.

# 1-4-7. Defining the Monitor Configuration

In MONITOR CONFIG menu operation, the following operating conditions of the monitor can be defined.

**OPTION INSTALLATION:** To specify the installed optional boards.

**D1 CONFIGURATION:** To specify the system in which D-1 signals are to be received.

**COMPONENT OFFSET:** To set the setup level for component signals

NTSC OFFSET: To set the setup level for NTSC signals. MONITOR TYPE: To define the model of your monitor.

In addition, all the menu options you changed can be reset to the factory-set conditions using the **RESTORE FACTORY SETUP** option.

# To start with the MONITOR CONFIG menu operation

- **1** Press the MENU button to display the initial menu.
- 2 Press the \$\\$ button until the cursor reaches MONITOR CONFIG, then press the ENT button.

  The MONITOR CONFIGURATION menu is displayed.

#### MONITOR CONFIGURATION

■OPTION INSTALLATION
D1 CONFIGURATION
COMPONENT OFFSET
NTSC OFFSET
MONITOR TYPE
RESTORE FACTORY SETUP

SELECT AND PRESS ENT

# To specify the installed optional boards

1 Set the cursor to OPTION INSTALLATION on the MONITOR CONFIGURATION menu and press the ENT button. The OPTION INSTALLATION menu 1 is displayed.

#### BVM-2811

OPTION INSTALLA	TION 1
MAUTO SETUP	NO
D1 OPTION	YES
D2 OPTION	NO
NTSC DECODER	YES
NTSC COMB ADP	YES
PAL DECODER	NO
PAL COMB ADP	NO
OTHER OPTIONS	
SELECT AND PRES	SS ENT

#### BVM-3011P

OPTION INSTALLAT	TION 1
■AUTO SETUP	NO
D1 OPTION	NO
D2 OPTION	ИО
NTSC DECODER	NO
NTSC COMB ADP	NO
PAL DECODER	YES
PAL COMB ADP	NO
OTHER OPTIONS	
SELECT AND PRES	SSENT

2 By pressing the \( \bar{\pmathbb{b}}\) button, move the cursor to the board for which the YES/NO setting must be changed, and press the ENT button. YES must be displayed for the installed board and NO for uninstalled boards. Pressing the ENT button toggles the YES/NO setting.

Repeat step 2 for the other boards as necessary.

**3** Move the cursor to OTHER OPTIONS and press the ENT button. The OPTION INSTALLATION menu 2 is displayed.

OPTION INSTALLAT	TION 2
■PAL-M DECODER	NO
SECAM DECODER	ИО
RGB/COMP O/P	NO
VITC BOARD	NO
SAFE AREA	NO
BLACK GENER	NO
OTHER OPTIONS	
SAVE AND APPLY	
SELECT AND PRES	SS ENT

- **4** Set YES/NO for the boards listed in menu 2 in the same manner as with menu 1.
- When the YES/NO setting is completed, move the cursor to SAVE AND APPLY and press the ENT button.

  The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

# To specify the system in which D-1 signals are to be received

Before starting the following procedure, set D1 OPTION of the above OPTION INSTALLATION menu 1 to YES (factroy setting for the BVM-2811).

The D1 CONFIGURATION menu is displayed.

D1 CONFIGURATION

NTSC SECAM \*

SPECIFY SETTING OF LOCAL SWITCH ON BV BOARD

SELECT AND PRESS ENT

The asterisk indicates the current setting.

The factory setting for the BVM-2811 is SECAM.

- **2** Move the cursor with the \$\( \) button to the system matching setting of the local switch on the BV board.
- **3** Press the ENT button.

  The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

## To set the setup level for component signals

1 Move the cursor with the \$\(\psi\) button to COMPONENT OFFSET on the MONITOR CONFIGURAITON menu and press the ENT button

The COMPONENT OFFSET menu is displayed.

COMPONENT OFFSET

■ N-10/SMPTE BETACAM 0
BETACAM 7.5

SELECT AND PRESS ENT

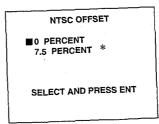
The asterisk indicates the current setting.

- - **BETACAM 0:** When supplying the 100/0/75/0 component signals.
  - **BETACAM 7.5:** When supplying the 100/7.5/75/7.5 component signals.
- **3** Press the ENT button.

  The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

# To set the setup level of NTSC signals

Move the cursor with the ♥ button to NTSC OFFSET on the MONITOR CONFIGURATION menu and press the ENT button. The NTSC OFFSET menu is displayed.



The asterisk indicates the current setting.

- - **7.5 PERCENT:** When supplying the NTSC signals of the 7.5 IRE set-up level.
- **3** Press the ENT button.

  The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

### To define the model of your monitor

Move the cursor with the ∮ button to MONITOR TYPE on the MONITOR CONFIGURATION menu and press the ENT button. The MONITOR TYPE menu is displayed.

MONITOR TYPE

BVM-1311/1411
BVM-1911/2011
BVM-1316/1416
BVM-1916/2016
BVM-2811/3011
\*

SELECT AND PRESS ENT

The asterisk indicates the current setting.

- **2** Move the cursor with the \$\\ \button to the model name of your monitor.
- **3** Press the ENT button. The message "DATA SAVED" is momentarily displayed and the monitor return to normal status.

### To restore the factory setup

1 Move the cursor with the \$\\ \bullet\$ button to RESTORE FACTORY SETUP in the MONITOR CONFIGURAITION menu and press the ENT button.

The following message is displayed.

RESTORE FACTORY SETUP

WARNING !! THIS WILL DESTROY ALL MANUALLY ENTERED DATA AND CONFIGURATIONS

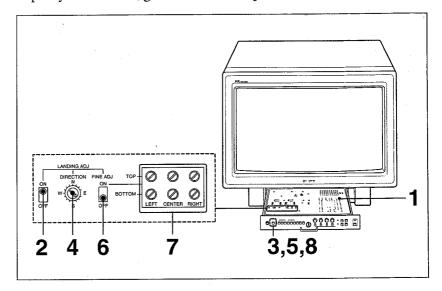
PRESS ENT TO CONFIRM OR ESC TO QUIT

**2** Press the ENT button. All the changed menu options returns to the factory-set conditions.

To cancel the restoration, press the ESC button before pressing the ENT button in step 2.

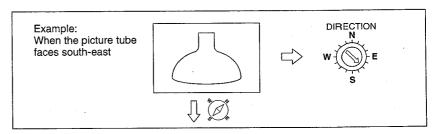
# 1-5. Beam Landing Correction

Correct the beam landing (color purity) with the controls on the R2 board if there is mislanding caused by terrestrial magnetism. For correction, do the direction (coarse) adjustment first, and if color impurity sill remains, go on to the fine adjustment.



#### Direction adjustment

- Display the internal white signal by pressing the WHITE button on the HY board (or display the input flat-field signal) and allow the unit for more than 30 minutes to start the adjustment.
- **2** Set the LANDING ADJ switch to ON. Keep the FINE ADJ switch to OFF.
- **3** Press the DEGAUSS button on the front panel.
- 4 Using a compass, determine which direction the picture tube faces, and turn the DIRECTION switch to set the arrow head to the indication of the same direction.



If no compass is available, turn the DIRECTION switch for the best purity in white while observing the flat-field signal on the screen.

**5** Press the DEGAUSS switch again.

#### Note

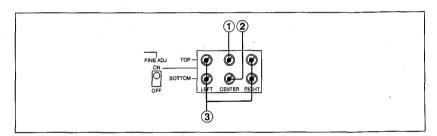
Wait for more than 5 minutes before pressing the DEGAUSS switch repeatedly. The switch does not function after while once it has been pressed.

If color impurity still remains, go on to the fine adjustment.

# Fine adjustment

- **6** Set the FINE ADJ switch to ON.
- 7 Turn the FINE ADJ controls to make the white signal as bright as possible in each area of the screen.

  The indications of the controls correspond to the portion of the screen. Use the controls in the following order.



**8** Press the DEGAUSS switch.

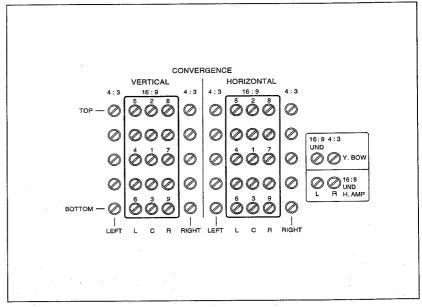
Repeat steps 7 and 8 until color impurity is eliminated.

# 1-6. Convergence Adjustments

For the convergence adjustment, use the CONVERGENCE controls on the DC board inside the drawer. Use the supplied screwdriver to turn these controls.

# 1-6-1. Convergence of a 16:9-Aspect Normal Picture

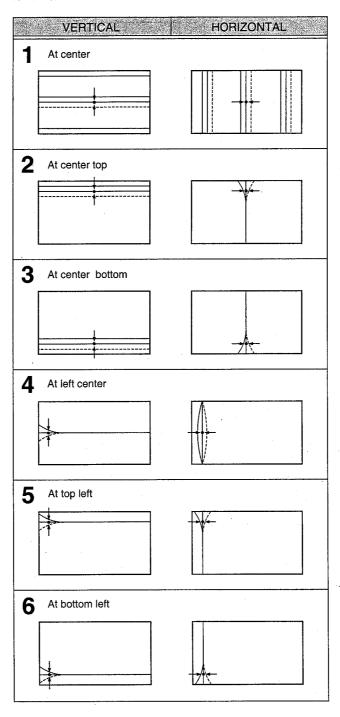
Adjust the convergence of 16:9 scan mode using the 16:9 controls.



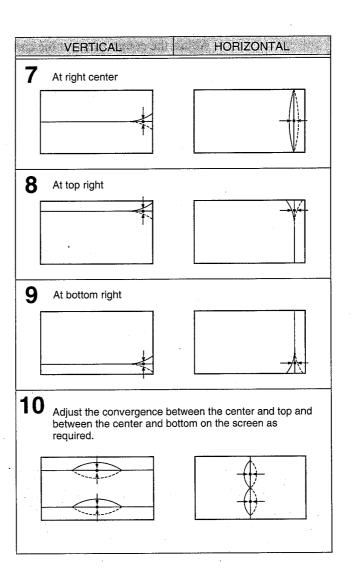
DC board

- Numbers 1 to 9 in the illustration above refer to the sequence of operations.
- The HORIZONTAL controls adjust the convergence horizontally, and the VERTICAL controls adjust it vertically.
- When adjusting the convergence, observe the portion of the screen indicated by arrows in the figures on the subsequent pages. The red and blue beams move symmetrically to the green beam.

Adjust the convergence at the corresponding portion of the screen, as follows.

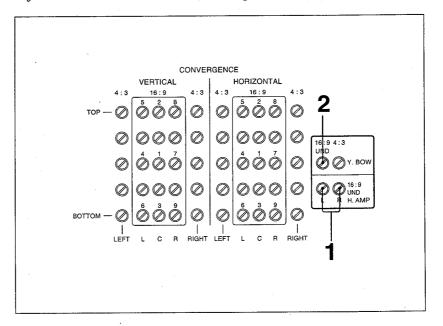




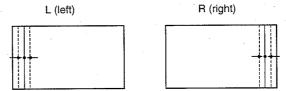


### 1-6-2. Convergence of a 16:9-Aspect Underscanned Picture

Adjust the convergence of 16:9 underscan mode using the 16:9 UND H. AMP and 16:9 UND Y. BOW controls after the convergence adjustment of normal scan mode is completed.



1 Adjust the horizontal convergence with the 16:9 UND. H. AMP controls.



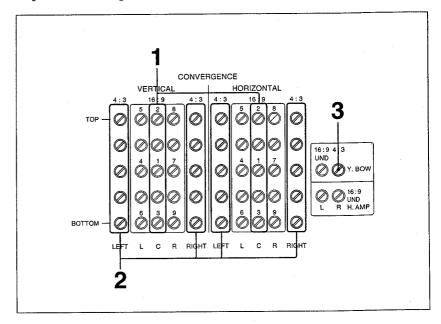
Adjust the horizontal convergence at the corners of the picture with the 16:9 UND. Y. BOW control.





### 1-6-3. Convergence of a 4:3-Aspect Picture

Adjust the convergence of 4:3 scan mode.

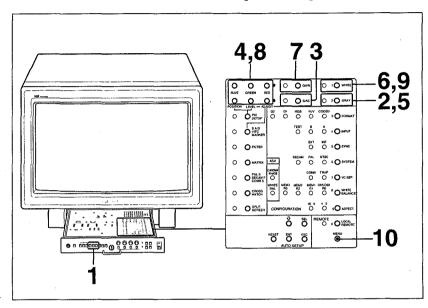


- Adjust the convergence at the center of the screen following the steps 1 to 3 in "1-6-1. Convergence of a 16:9-aspect normal picture."
- 2 Adjust the convergence at the right and left portions of the screen using the 4:3 controls.
- **3** Adjust the horizontal convergence at the corners using the 4:3 Y. BOW control.

### 1-7. Picture Adjustments

### 1-7-1. White Balance Adjustment

During the adjustment, turn the red green and blue beams on and off with the SCREEN switches on the front panel as required.



- 1 Display a test signal on the screen.
- **2** Press the GRAY button.

  The associated lamp lights and the internal gray signal is displayed on the screen.
- **3** Press the BIAS button. The associated lamp lights.
- 4 Adjust the white balance at the lowlight by pressing the BLUE, GREEN and RED buttons ↑ or ↓.
- **5** Press the GRAY button again. The associated lamp goes off and the internal gray signal disappears.
- **6** Press the WHITE button. The associated lamp lights and the internal 100% white signal is displayed on the screen.
- **7** Press the GAIN button. The associated lamp lights.
- 8 Adjust the white balance at the highlight by pressing the BLUE, GREEN and RED buttons ↑ or ↓.



**9** When the adjustment is completed, press the WHITE button so that the lamp goes off and the white signal disappears.

Repeat steps 2 through 9 until the same white can be obtained both at the lowlight and highlight.

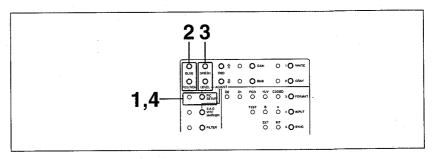
For white balance adjustment using a color analyzer or equivalent, see Section 2.

**10** Press the MENU button to display the SAVE WHITE BALANCE menu and store the white balance in the resister.

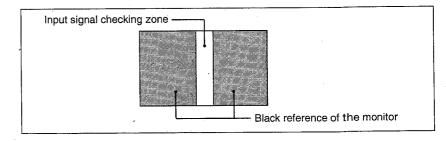
See "1-4-4. Selecting the White Balance."

### 1-7-2. Black Level Adjustment

Match the black reference of the monitor with the black level of the input signal to be monitored.



Press the PIC SETUP button. The associated lamp lights and a vertical picture band and the black reference of the monitor are displayed on the screen.



- **2** Press the POSITION buttons ↑ or ↓ to move the position of the picture band horizontally so that the black signal of the picture is located next to the black reference area.
- 3 Press the LEVEL buttons ↑ or ↓ to match the brightness of the black reference area with that of the input black signal.
- 4 Press the PIC SETUP button again.

### 1-8. Specifications

General

**CRT** 

BVM-2811: 525 lines per picture, 60 fields System

per second interlaced, NTSC BVM-3011P: 625 lines per picture,

50 fields per second interlaced, PAL 16:9-aspect Super Fine Pitch Trinitron

0.35 mm phosphor trio pitch, 90-degree deflection, 36.5 mm dia. in-line gun

Effective picture size:

 $348.8 \times 620 \text{ mm (h/w)} (13^3/4 \times 24^1/2 \text{ inches})$ 

711.4 mm (28 inch) picture measured

diagonally

EHT (Extremely High Tension) is shut off in Picture tube protection

the event of scan failure.

30 minutes to meet specifications Warm up

Properly adjusted HV 27 kV at zero beam Anode voltage

current

Power consumption BVM-2811: 185 W (typical)

220W (maximum)

BVM-3011P: 175 W (typical) 210W (maximum)

BVM-2811: 100-120 V AC  $\pm 10\%$ , 50/60 Hz Power requirements

BVM-3011P: 220-240 V AC ±10%,

50/60 Hz

 $754 \times 615 \times 677 \text{ mm (w/h/d)}$ **Dimensions** 

 $(29^3/4 \times 24^1/4 \times 26^3/4 \text{ inches})$ 

including projecting parts and controls

Mass 92 kg (202 lb 13 oz)

Inputs/outputs

BNC type (5 inputs with 5 loop-through Video inputs

outputs)

VIDEO A/B, TEST, R/G/B:

1 Vp-p composite ±6 dB positive,

high-impedance

Y: Composite, 1.0 Vp-p ±6 dB,

high-impedance

 $R-Y/B-Y: 0.7 Vp-p \pm 6 dB$ ,

high-impedance

Serial component video input (BVM-2811 only)

COMPONENT DIGITAL: BNC type (2 inputs with 2 active-through outputs)

Transmission length Max. 200 m (656 feet)

(when using a coaxial cable 5C-2V of Fujikura America Inc./Fujikura Europa Ltd.

(FEL) or the equivalent)

Sampling frequency Y: 13.5 MHz

R-Y/B-Y: 6.75 MHz

Quantization

10 bits/sample

Color system

525/60 or 625/50, automatic selection Y: 100 Hz to 5.75 MHz ±1 dB

Bandwidth

R-Y/B-Y: 100 Hz to 2.75 MHz ±1 dB

Less than 1% (2T pulse)

K factor Sync input

EXT SYNC: BNC type (1 input with 1 loop-

through output)

1 to 8 Vp-p negative, high-impedance

Input return loss

More than 46 dB (7 MHz with 75-ohm

termination)

Hum rejection

Reduced by more than 50 dB

Maximum hum: Less than 4 Vrms, where hum is applied to the monitor in floating

ground mode

Video outputs (BVM-3011P only)

DECODER OUT: BNC type (3)

Output decoded signals only when BKM-

1440 is installed.

Remote control

REMOTE: 10-pin connector (1)

Probe receptacle

AUTO SETUP PROBE: 12-pin connector (1)

### Video signal

Luminance channel (RGB and composite signals)

Differential gain

Within 2% for a luminance from 0 to 68 cd/m<sup>2</sup>

Differential phase

Within 2° for a luminance from 0 to 68 cd/m<sup>2</sup>

Frequency response

Monochrome mode: 100 Hz to 8 MHz ±1 dB

(aperture correction at 0)

Color mode: Trap or comb filter removes frequency in 3.58 MHz region (BVM-2811)

or 4.43 MHz (BVM-3011P) region RGB mode: 100 Hz to 10 MHz ±1 dB

Chrominance channel

Demodulation axis

R-Y, B-Y

Bandpass

1.3 MHz equiband

Subcarrier regeneration

±1° (standard input signal)

Phase control range

More than ±15° (standard input signal)

Chroma gain control range

More than ±6 dB

Chrominance/luminance

Time error

Less than 30 nsec

Gain error

Less than 5%

Aperture correction

Adjustable continuously up to 6 dB boost at

4.5 MHz or 6.5 MHz (selectable)

DC restoration (RGB and composite signals)

Back porch type

Back porch level: Within 1% of peak luminance, 10% to 90% (average picture

level)

### Synchronization

AFC time constant 0.5 msec (fast), 2 msec (normal) or 7 msec

(slow)

Line pull range/line hold range

More than ±500 Hz at 0.5 msec time

constant

Vertical blanking time

Normal: Within 1 msec.

Underscan: Within 0.8 msec.

Horizontal retrace time Within 10 µsec

### Picture performance

Normal scan 5% overscan of CRT effective screen area

(adjustable range more than  $\pm 15\%$ )

Underscan 3% underscan of CRT effective screen area

(adjustable range more than  $\pm 15\%$ )

Linearity Within a central area bounded by a circle

whose diameter equals the picture height, within 0.5% of the picture height, out of area

1%

Color temperature

D65, adjustable to other color temperatures

Nominal chromaticity coordinates

BVM-2811: SMPTE C phosphor

	x	у
Red	0.630	0.340
Green	0.310	0.595
Blue	0.155	0.070

### BVM-3011P: EBU standard phosphor

		x	у	
	Red	0.64	0.33	
	Green	0.29	0.60	
	Blue	0.15	0.06	

Convergence error Central area: Less than 0.5 mm

Periphery: Less than 0.8 mm

Calibrated contrast 68 cd/m<sup>2</sup> at peak white of standard 1 Vp-p

signal

Raster size stability Less than 1% picture height, 0% to 100%

APL at 68 cd/m<sup>2</sup> peak luminance

Scan delay Horizontal: Approx. 1/4 line

Vertical: Approx. 1/2 field

Resolution 950 TV lines

(center, at 68 cd/m<sup>2</sup> luminance)

### **Environment**

Operating temperature  $-0^{\circ}$  C to  $40^{\circ}$  C (32° F to 104° F)

Optimum temperature range

20° C to 30° C (68° F to 86° F)

Humidity

0 to 90% (no condensation)

Altitude

Approx. 3,050 m (10,000 feet) max.

### Supplied accessories

AC power cord (1)

Cord stopper (1)

Screwdriver (1)

Drawer keys (2)

Extension board (1)

10-pin connector (1)

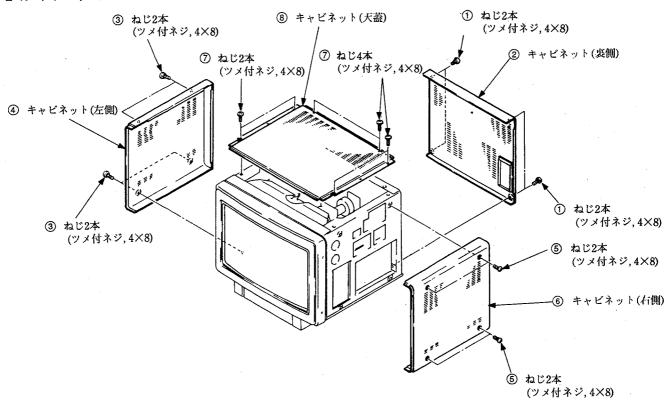
Fuses (2)

Operation and maintenance manual (1)

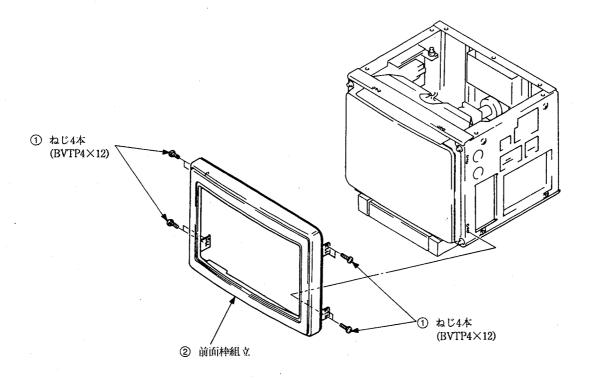
Design and specifications are subject to change without notice.

### 第2章 外し方

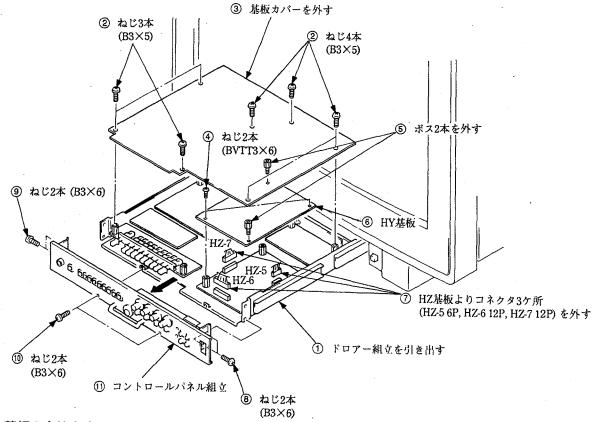
### 2-1. キャビネットの外し方



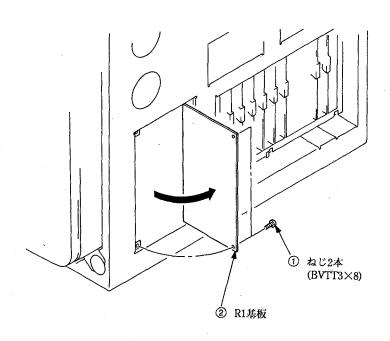
### 2-2. 前面枠組立の外し方



### 2-3. コントロールパネル組立の外し方

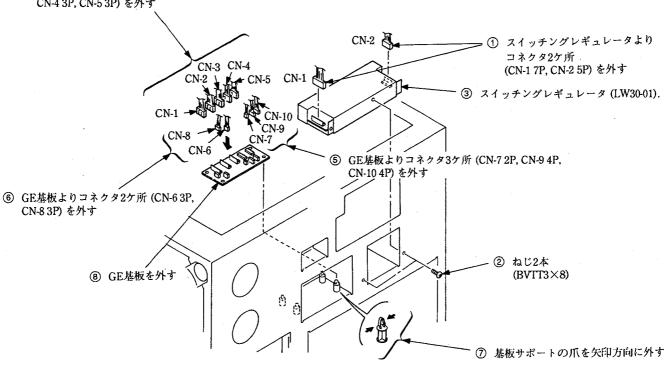


2-4. R1基板の点検方法

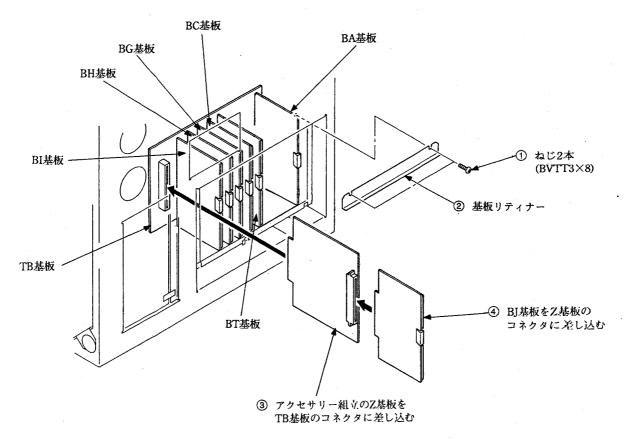


### 2-5. スイッチングレギュレータとGE基板の外し方

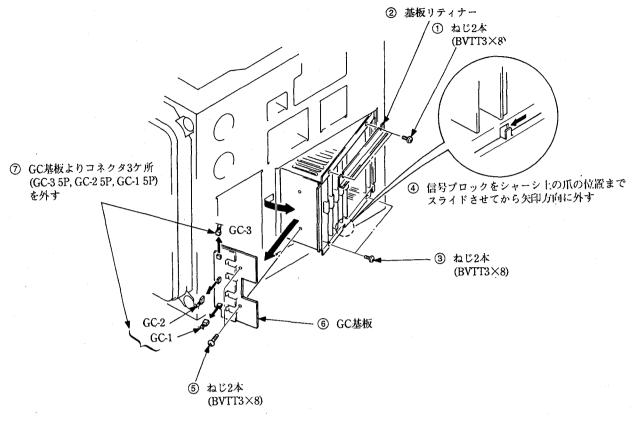
④ GE基板よりコネクタ5ケ所 (CN-1 5P, CN-2 5P, CN-3 5P, CN-4 3P, CN-5 3P) を外す



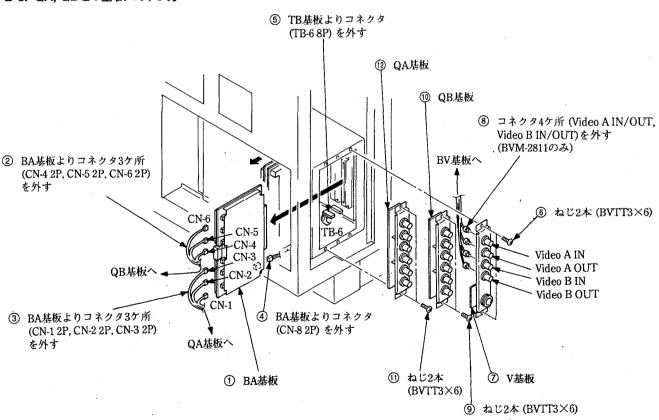
### 2-6. BJ基板の点検方法



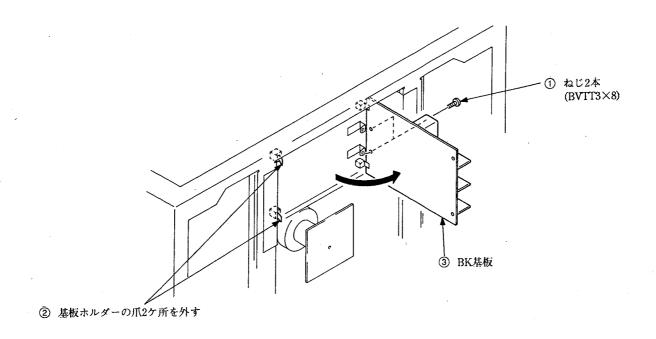
### 2-7. GC基板の外し方



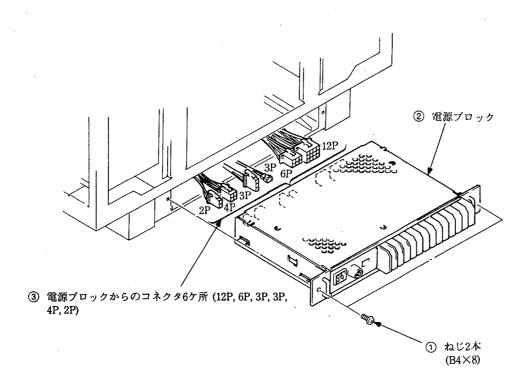
### 2-8. QA, QBとV基板の外し方



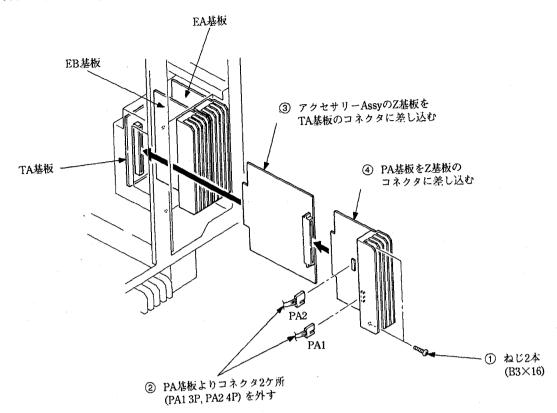
### 2-9. BK基板の点検方法



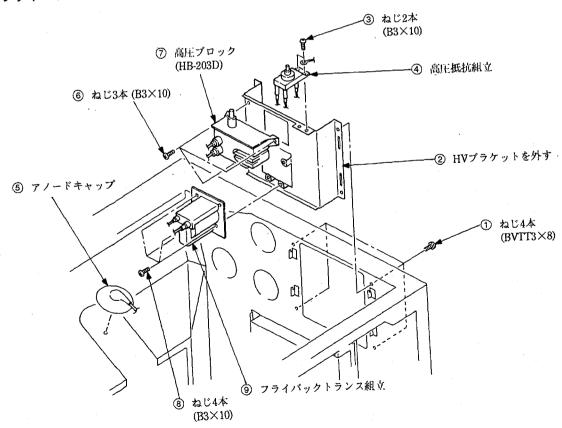
### 2-10. 電源ブロック組立の外し方



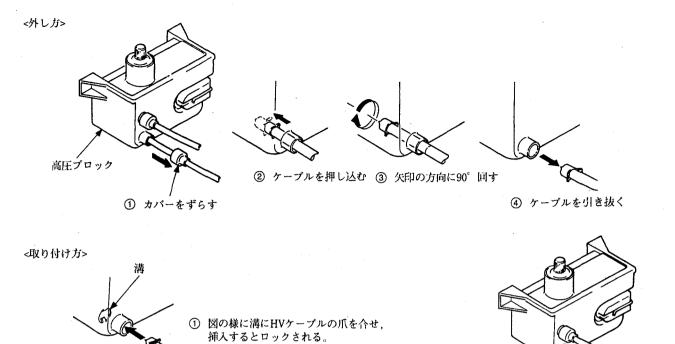
### 2-11. PA基板の点検方法



### 2-12. フライバックトランスと高圧ブロック

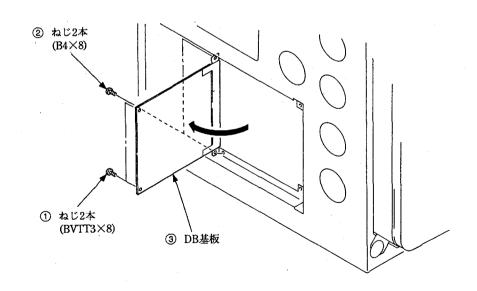


### 2-13. HVケーブルの外し方取り付け方

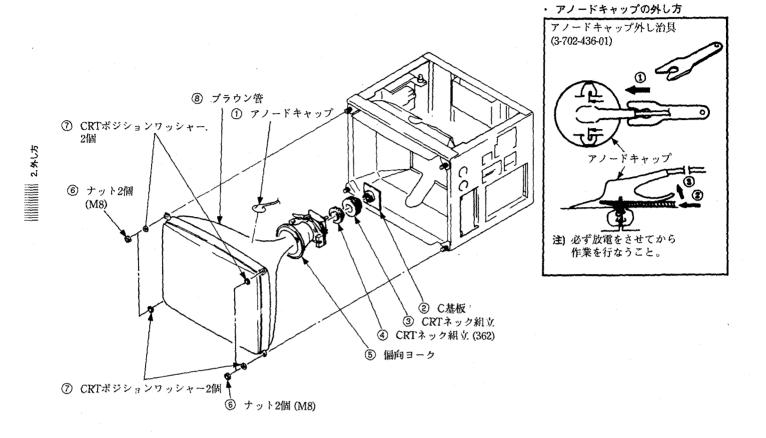


② カバーを取り付ける

### 2-14. DB基板の点検方法

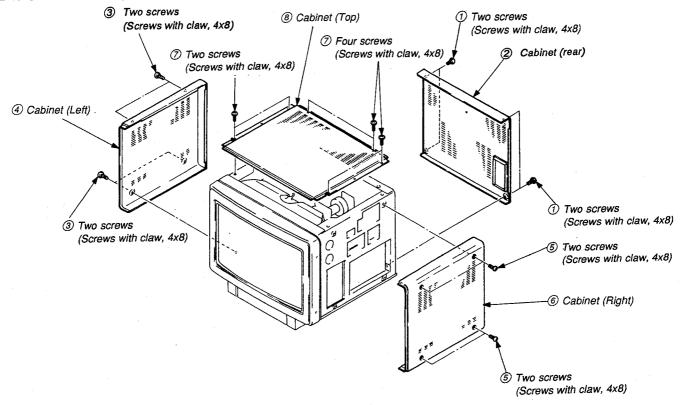


### 2-15. ブラウン管の外し方

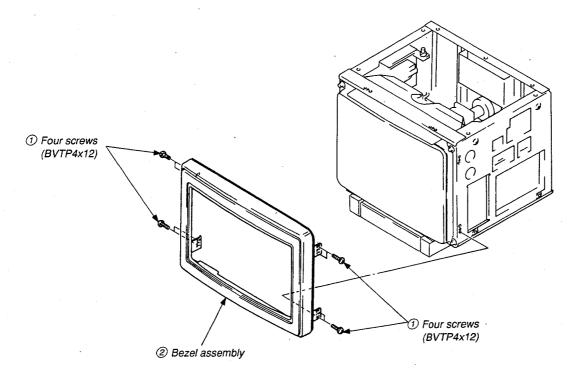


### SECTION 2 DISASSEMBLY

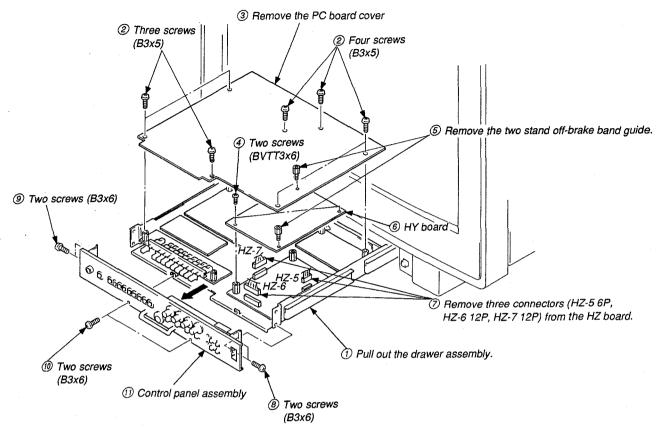
### 2-1. CABINET REMOVAL



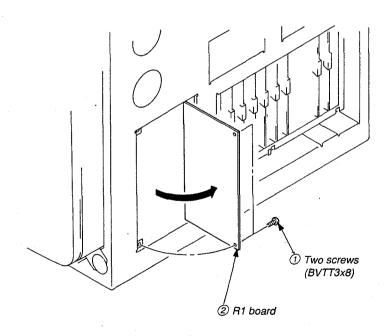
### 2-2. BEZEL ASSEMBLY REMOVAL



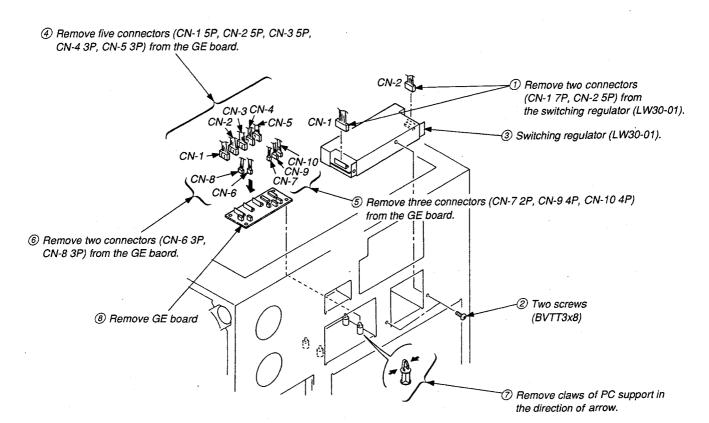
### 2-3. CONTROL PANEL ASSEMBLY REMOVAL



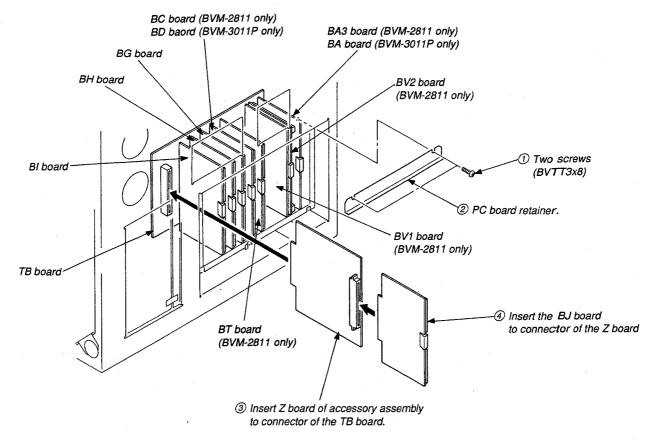
### 2-4. CHECK OF R1 BOARD



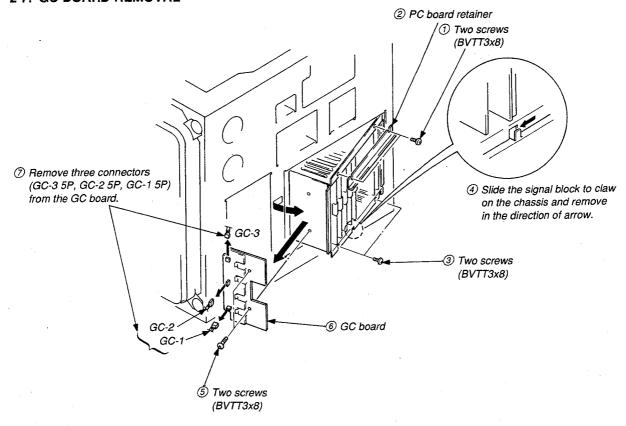
### 2-5. SWITCHING REGULATOR (LW30-01) AND GE BOARD REMOVAL



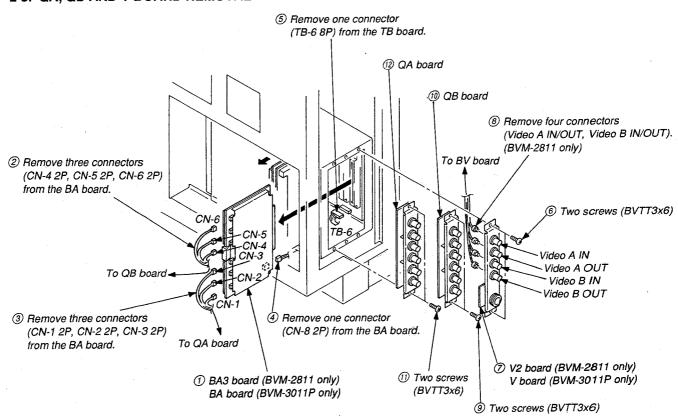
### 2-6. CHECK OF BJ BOARD



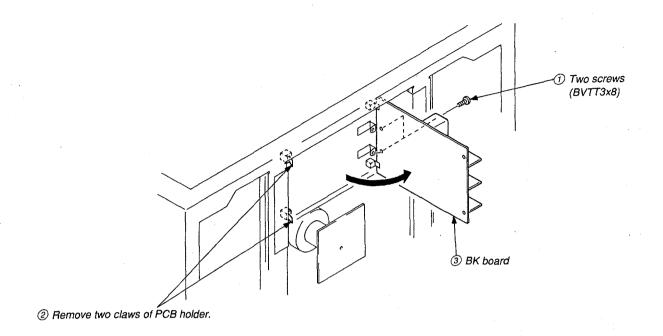
### 2-7. GC BOARD REMOVAL



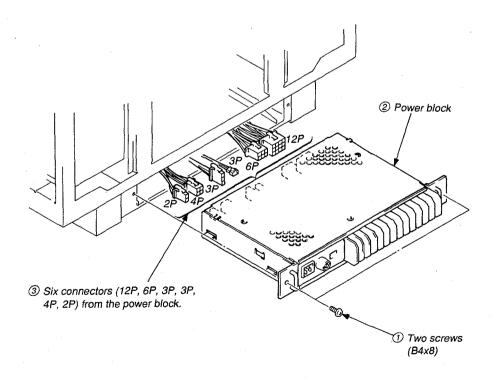
### 2-8. QA, QB AND V BOARD REMOVAL



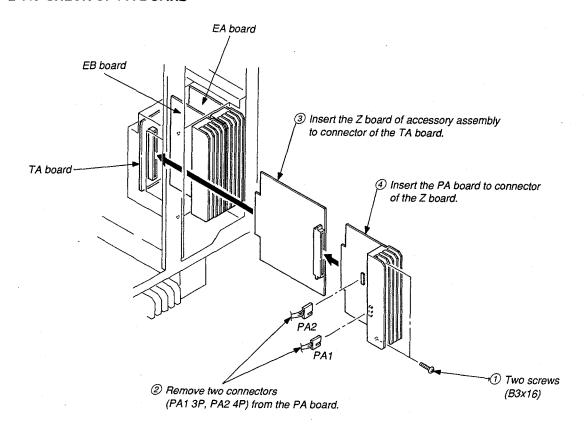
### 2-9. CHECK OF BK BOARD



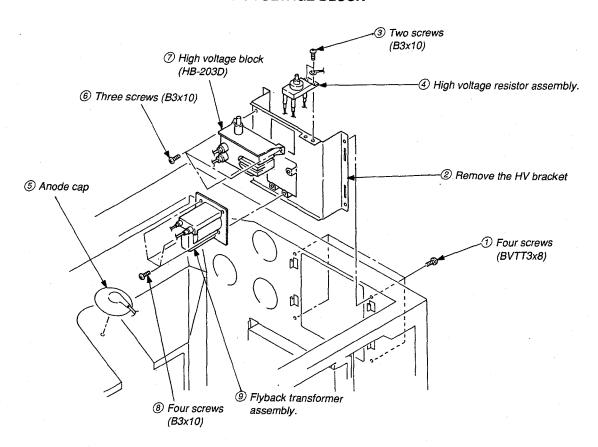
### 2-10. POWER BLOCK ASSEMBLY REMOVAL



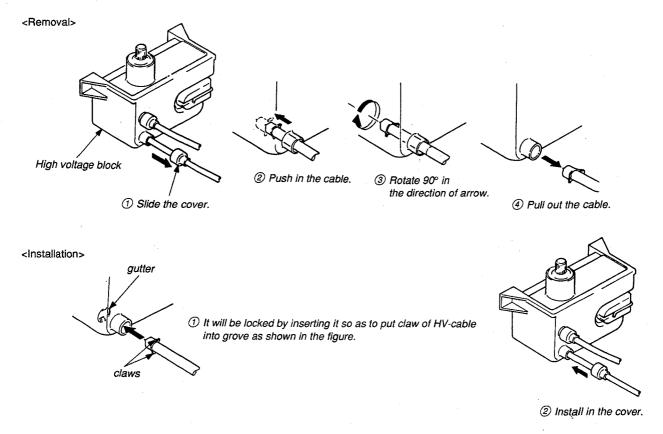
### 2-11. CHECK OF PA BOARD



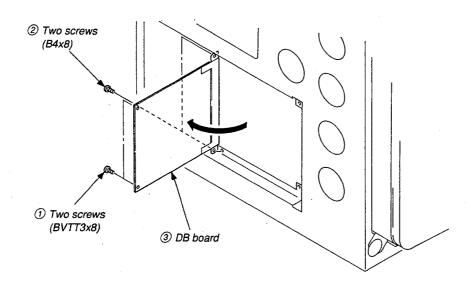
### 2-12. FLYBACK TRANSFORMER AND HIGH VOLTAGE BLOCK



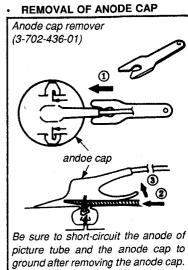
### 2-13. REMOVAL AND REPLACEMENT OF HIGH VOLTAGE CABLE



### 2-14. CHECK OF DB BOARD



### 2-15. PICTURE TUBE REMOVAL



### 第3章

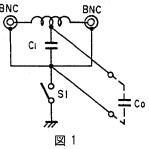
### 回路説明

### 3-1. QA, QB, BA 基板

### 3-1-1. 入力回路

### CABLE COMP (QA, QB基板)

QA基板のL及び、C1でCABLE COMPを構成(図1)していてリターンロスの補償をしています。また、S1は入力の接地、非接地の切換えを行い、非接地時には同相成分除去を行うことが出来ます。QA基板の他の系統及びQB基板も同様です。



### Hook up (BA基板)

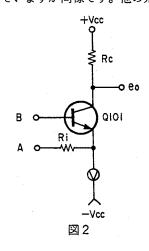
Q101~Q105で構成され,同相成分除去を行います。図2の 回路において、A、B各々の入力のGAINは

$$A = \frac{Rc}{Ri}$$
,  $B = -\frac{Rc}{Ri}$ 

Aに入力ec + ei, Bに入力ec - eiを加えるとeoは

$$eo = \frac{Rc}{Ri} (ec + ei) + (-\frac{Rc}{Ri})(ec - ei) = 2\frac{Rc}{Ri} ei$$

となり、ecが消去され同相成分は出力されません。Hook up 回路では特性改善のため、NF (Negative Feedback) AMPで構成していますが同様です。他の系統も同様です。

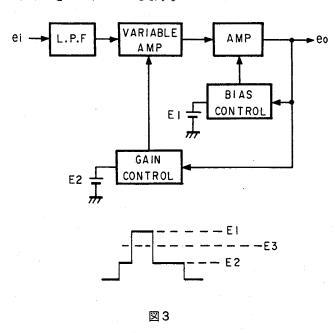


INPUT SELECT SW, SYNC SELECT SW (BA 基板) COMPOSITE VIDEO信号はINPUT SELECT SW IC1でVIDEO A/B/TESTの選択を行い、SYNC信号はSYNC SELECT SW IC2でSYNC INT/EXTの選択を行います。

### 3-1-2. 同期分離回路

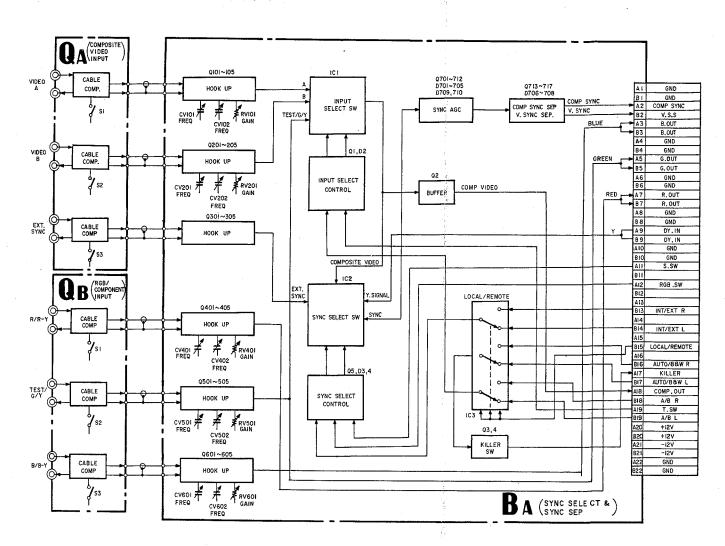
### SYNC AGC

L.P.F (Q701), 可変増幅器 (Q702~Q705) AMP (Q706, 707), バイアスコントロール回路 (Q708~Q710), ゲインコントロール回路 (Q711, 712) より構成されています。 図3のeo (Q707のコレクター) には, 反転した COMPOSITE VIDEO (SYNC) 信号が出力されます。バイアスコントロール回路は, eo の最大値と E1 (Q708のベース電圧) を比較し, 一致するように AMP のバイアスをコントロールします。また, ゲインコントロール回路は, eo のペデスタル電圧と E2 (Q711 のベース電圧) を比較し一致するように可変増幅器のゲインをコントロールします。



COMP.SYNC SEP, V SYNC SEP Q713~Q715によりE3 (Q713ベース電圧)と比較し,同期分離します。また,この信号はL.P.F (Q716)で水平成分を除去し、Q717で垂直同期分離します。

### QA, QB, BA 基板ブロックダイヤグラム



### BG 基板 3-2.

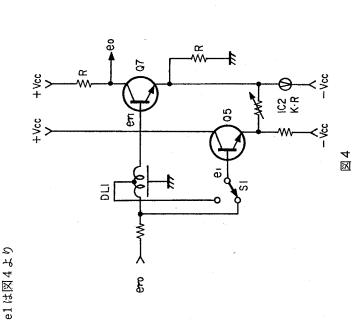
### 輝度信号系 3-2-1.

IC1はCOMP.VIDEO信号とY/C分離後のY信号の切換え SWで, ドロワー内のFILTER SW及び, KILLER信号で FILTER SW 動作します。

APERTURE CONTOROL

DL1, Q5, 7, 8, IC2で構成され, IC2は可変抵抗素子で③, ④ピン, ①, ⑥ピンの間の電位差により①, ③ピン間の抵抗値 が変化します。

入力信号をer0とし, DL1により1回運延した信号をer1, 2回遅延した信号をer2とすると,

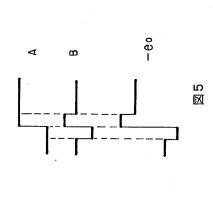


 $e1 = (e \tau 0 + e \tau 2)/2$ 

e0 は

K:回変定数

上式は図5において一項をAとすると、二項はBになりKを 可変するとこにより, プリシュート, オーバーシュートの量 を可変することが出来ます。S1はブースト周波数の切換え



Y DELAY, Y AMP BUFF

DL2によりY/C DELAY TIMEを合わせ, 増幅して出力 します。

カラーゲインコントロール回路 (B - Y む同様です) 3-2-2.

R-Y AMP & CLAMP

コーダー基板より出力されたR-Y信号はQ21, 22で増 幅し同時にQ24, IC3により水平同期信号部をクランプしま

R-Y GAIN CONTROL AMP 可変抵抗素子IC4とQ25~Q27で構成される可変増幅器で

この可変増幅器はIC4の優ピンの電圧によりGAINをコントロールすることが出来, COLOR GAIN CONTROL よ り供給されます。

AGC PULSE GENERATOR

COLOR GAIN CONTROLのAGCの基準パルスを発生し # 4

R-Y GAIN CONTROL AMPと同様でIC4の®ピンの AGC PULSE GAIN CONTROL AMP 電圧により GAIN コントロールします。

COLOR GAIN CONTROL

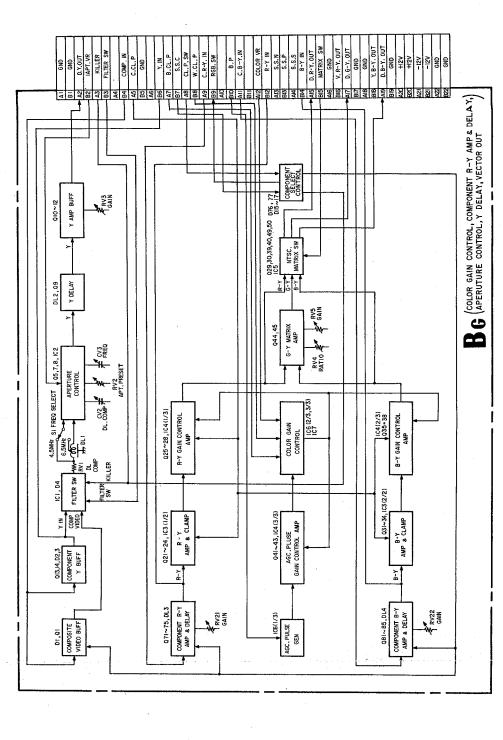
フロントパネルの CHROMA コントロールで与えられる電 圧を比較し, 一致するようにIC7 (1/2) の出力を AGC AGC PULSE GAIN CONTROL AMPの出力のAGCパ PULSE GAIN CONTROL AMPのコントロール端子に与え, COLOR GAINをかえています。 ングします。そして, IC7 (1/2) でAGCパルスの振幅と ルスをIC6 (2/3) でクランプし, IC6 (3/3) でサンプリ

Q44,45で構成される増幅器により,R-Y及びB-Y信 号よりG-Yをマトリクスしています。 3-2-3. G-Y MATRIX AMP

コンポーネントのR-Y信号は振幅, 極性, 運延量をデコ 3-2-5. COMPONENT R - Y AMP & DELAY ダー出力のR-Y信号と一致させています。

40, 49, 50, IC5で構成され, CP14~CP19の抵抗回路網 NTSC MATRIX € - F\t, CP14~CP19, Q29, 30, 39, でマトリクスし, IC5 で切換えます。 3-2-4. NTSC MATRIX SW

## BG 基板ブロックダイヤグラム



### 3-3-1. 丫信号, 色差信号と RGB 信号の切換え, AGC Pulseの挿入, Y/C MATRIX

Y 信号, クロスハッチ信号, SET UP信号は, IC1 (1/3, 2/3) によって切換えられ, Q1のバッファを通して出力します。 丫信号, クロスハッチ信号, SET UP信号の切換えとBUFF

IC2 (1, 2/3) によりR-Y, Red, SET UPを切換え, R-Y信号, Red信号, SET UP信号の切換え Q4のバッファを通して出力します。

Q2, IC5 (2/2) でバックポーチ部分をSAMPLE & HOLD (S/H) し, IC1 (3/3) で信号と切換え信号のSCREENING を行います。(色差の時は水平同期信号部をS/Hします) Y SCREENING (R-Y, G-Y, B-Yも同様です)

## RED MATRIX, BLUE ONLY SW, BUFF

(G, Bも同様です)

CP9の抵抗網によりY/C MATRIX PULSE GENより 出力される AGCパルスを挿入します。IC7はフロントパネ ルのBLUE ONLY SWにより動作し, Blueの信号をモノ クロ表示するための VIDEO SW です。

### BRIGHTNESS CONTROL, PEAK LIMITTER CONTRAST CONTROL, 3-3-2.

によりCONTRAST CONTROLを行い、Q102のBIASを IC101の可変抵抗素子とQ102, 103のAMPで構成される 可変増幅器で, IC101の④ピン電圧をコントロールすること コントロールすることにより BRIGHTNESS CONTROL R.CONT, BRT CONTROL AMP (G, Bも同様です) を行います。

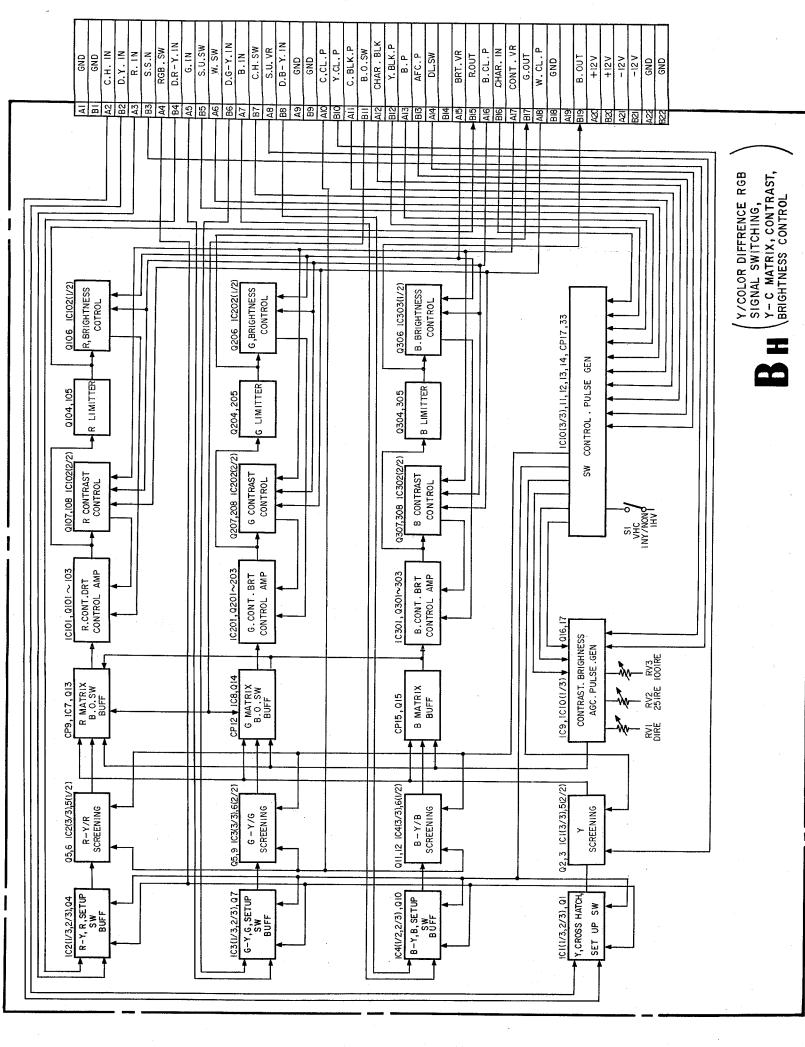
R LIMITTER (G, Bも同様です)

Q104, 105で構成されるLIMITTERにより過大入力時の 振幅制限をします。

リングして AGCパルスの振幅と, フロントパネルのコント 信号中のAGCパルスをQ107でクランプし, Q108でサンプ で比較して一致するようにR CONT, BRT CONTROL AMP のGAINをコントロールし, コントラストコントロールします。 ラストボリュームより与えられる基準電圧をIC102 (2/2) R CONTRAST CONTROL (G, Bも同様です)

-5(기) と, フロントパネルのブライトネスボリュームより与えられ る基準電圧を, IC102 (1/2) で比較し一致するようにR Q106により BLACK LEVEL をサンプルホールドした値 CONT, BRT CONTROL AMP のバイアスをコントロー R BRIGHTNESS CONTROL (G, Bも同様です) ルし、ブライトネスをコントロールします。

ľΓ イヤグ ックダ BH基板ブロ



## 3-4. BI基板 (G, Bも同様です)

3-4-1. R SCREEN SW, AGC PULSE挿入フロントパネルのR SCREEN SWにより, REDをCut offします。また, H周期のAGCパルスを除去し, ビデオアウトのGAIN, BIAS及び電流検出のための基準パルスを挿

3-4-2. R LIMITER, GAIN/BIAS CONTROL AMP LIMITERは白側の過大入力を制限するためのものです。 GAIN/BIAS CONTROL AMPはCONTRAST CONTROL AMPと同様可変抵抗素子で構成しています。(BH基板参照)

# 3-4-3. R FEED BACK AMP, R GAIN CONTROL,

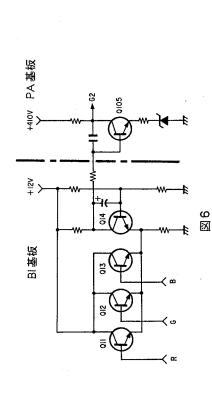
R BIAS CONTROL R BIAS CONTROL R FEEDBACK AMPはVIDEO OUT出力よりBK基板 R NF BUFFを通り出力された信号を位相反転します。この出力はR BIAS をコントロールします。(この時 VIDEO OUT出力は黒基準レベルが約-90Vになります)また,R GAIN CONTROLにより基準パルスのレベルがIC103の③ピンの電圧と一致するようにGAINをコントロールします。(この時ドロアー内のGAIN VRを回すと,3-41. で挿入される基準パルスが変化しますが,GAIN CONTROLでは常に一定になるようにコントロールするため,信号の振幅(GAIN)が変化します。)

### 3-4-4. Rカソード電流検出, G1 BIAS CONTROL BK 基板電流検出の項参照。

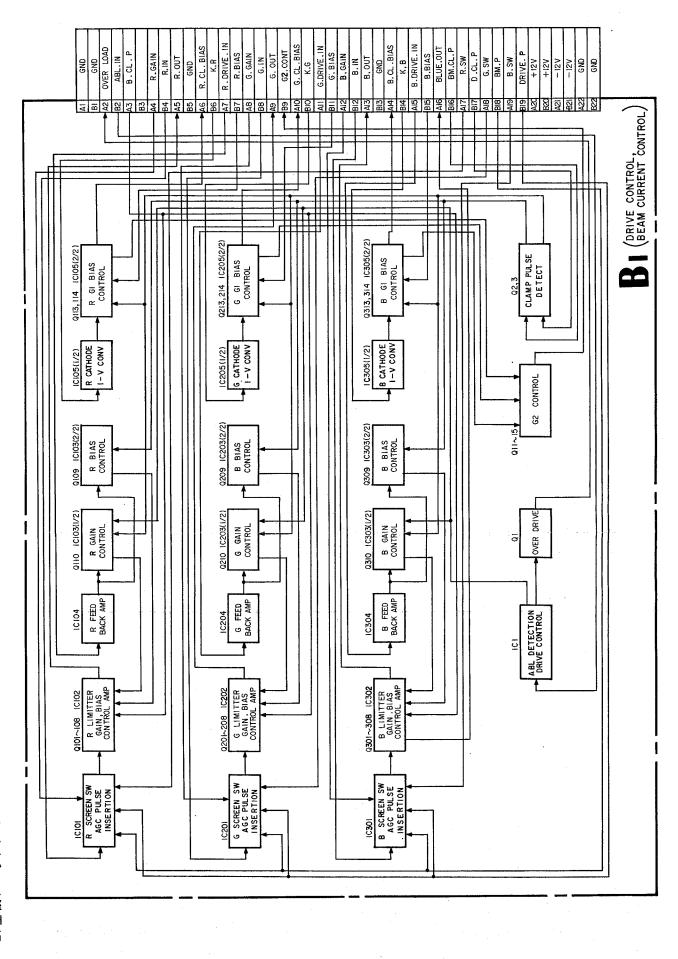
3-4-5. ABL検出, DRIVE CONTROL, OVER DRIVE CRT 保護のためカソード電流が基準値以上にならないように, ABL検出, DRIVE CONTROLによりGAIN CONTROLの基準レベルをコントロールし, コントラストコントロール 同様にGAINをきげカソード電流を小さくします。 OVER DRIVEはフロントパネルのOVER DRIVE LED を占任します。

### 3-4-6. G2 CONTROL

Q11~13のベース電圧の一番高い (G1 BIASの一番深い) TrのみON し, Q14のベースの基準電圧と比較され, 一致するようにPA基板 G2出力 Tr Q105をコントロールします。 Q14のベース電圧はG1において黒レベルの電圧が約-120V になるように設定されていて, 常に Ekco (-120V) を一



BI 基板ブロックダイヤグラム



## 3-5. BJ 基板

# SYNC PROCESSOR, PULSE GENERATOR

### 3-5-1, 1H Pulse処理

BA基板で同期分離されたCOMPOSITE SYNCは1H Pulse処理でV SYNC及び, 等価ペルスを分離した1H SYNCとさらにペルス幅を一定にした H SYNCを作ります。

## 3-5-2. 2fH MULTIVIBRATOR

フライバックパルスより2倍のfhのパルスを作ります。

### 3-5-3. V COUNTER

2fHパルスをカウントダウンし,入力信号のない時は384HでV SYNCのトリガパルスを発生し,入力信号のある時は入力のV同期信号でリセットされV SYNCのトリガパルスを発生します。また,V同期の安定性を高めるため,V同期信号のノイズゲートがかけられています。

## 3-5-4 V SYNC & DELAY

V COUNTERより出力されるトリガバルスにより, V SYNC 及びV BLANKING PULSEを発生します。また, フロントパネルのV DELAY SW をONの時は入力信号のV同期に対してV/2選延した位置に発生し, V DELAYを行います。

### 3-5-5. クロスハッチGEN

フライバックパルスに同期した約18fhのパルス発生器によフライバックパルスに同期した約18fhのパルス発生器により縦線を作り, フライバックパルスをカウントダウンして横線を作っています。

### 3-5-6. BURST GATE, Y-CLAMP, C-CLAMP PULSE GEN

1H PULSE処理より出力される1H SYNCよりモノマル チプライヤー及びL, C, Rと Trにより BURST GATE PULSE (B.G.P), 輝度信号クランプパルス (Y.CL.P) 及び 色差信号クランプパルス (C.CL.P) を作っています。

### 3-5-7.PICTURE SET-UP PULSE GEN ピクチャーセットアップを行う時の信号のGATEパルス発 生器でモノマルチプライヤで構成しています。

3-5-8. SPLIT, Y BLANKING, C BLANKING, PULSE GEN

Y-色差及びRGB信号よりDC再生するため, 信号に帰線期間黒抹準信号を挿入するためのY BLANKING PULSE (Y.BLK.P) とC BLANKING PULSE (C.BLK.P) を作っています。また, C.BLK.PはSPLIT表示するためBLANKING信号と, B/W表示するためのBLANKING信

号が付加されています。

# 3-5-9. H周期AGC & CLAMP PULSE GEN

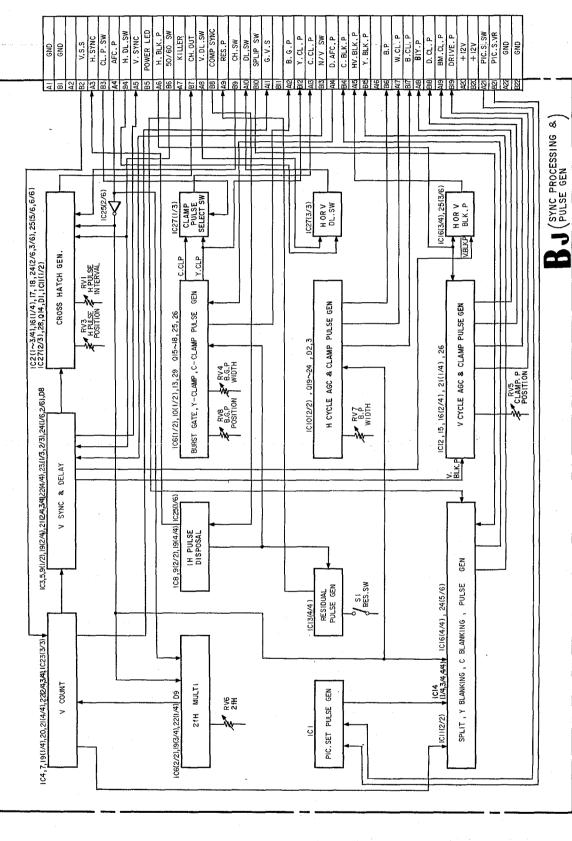
カラーゲインコントロール, コントラストコントロール, ブライトネスコントロールでは, 基準信号を挿入し, フィードバックループを作ることで回路の安定性を高めていますが, そこで使用するH周期のBLACK PULSE (B.P.), BLACK CLAMP PULSE (B.CL.P) WHITE CLAMP PULSE (W.CL.P) を作っています。

PULSE (D.CL.P) を作っています。

3-5-10. V周期AGC & CLAMP PULSE GEN
VIDEO OUTのGAIN CONTROL回路,電流検出问路で
は基準信号を挿入し、フィードバックループを作ることで, で共用しているため,色差に回路の安定性を高めていますが,そこで使用するV周期の Y.CL.Pに切換えています。BEAM PULSE (BM.P), DRIVE PULSE (DRIVE.P),

3-5-11.その他 CLAMP PULSE切換えSWは黒基準挿入回路と色滢とRGB で共用しているため, 色蓋の時は C.CL.Pに RGB の時は,

## BJ 基板ブロックダイヤグラム



3-10(J)

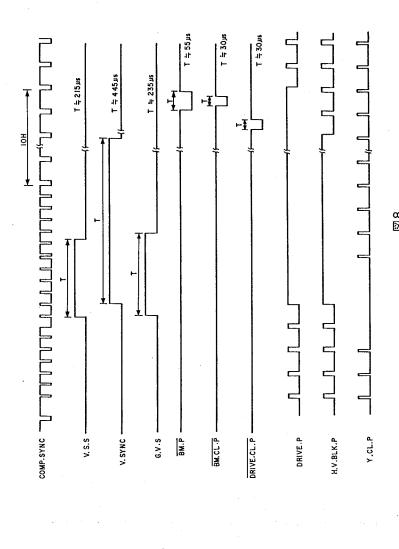
I

COMP SYNC

AFC.P -

Y.BLK.P

D.AFC.P



FIELD2 VERTICAL BLANKING

T2 (µs)

T1 (µs)

9.0

0.5 0.5 4.7

Y. BLK. P D. AFC. P

8. G. P

- SYNC

4.8

COMP. SYNC

AFC. P

COMP VIDEO

H.BLK.P HV.BLK.P DRIVE P

C.BLK,P

C.CL.P -

H.SYNC -

Y.CL.P

B.6.P

9. P

B.CL.P

W.CL.P.

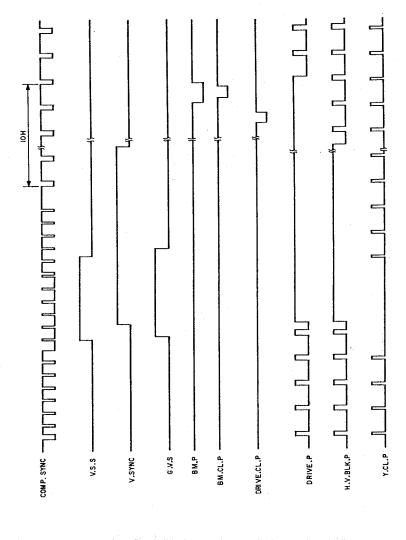
2.6

5.9

1.4

3.0 5.5 9.0 7.2

0.6



3-11(J)

3-12(J)

**ာ** 

3.5

W. CL. P

B. P. B. CL. P

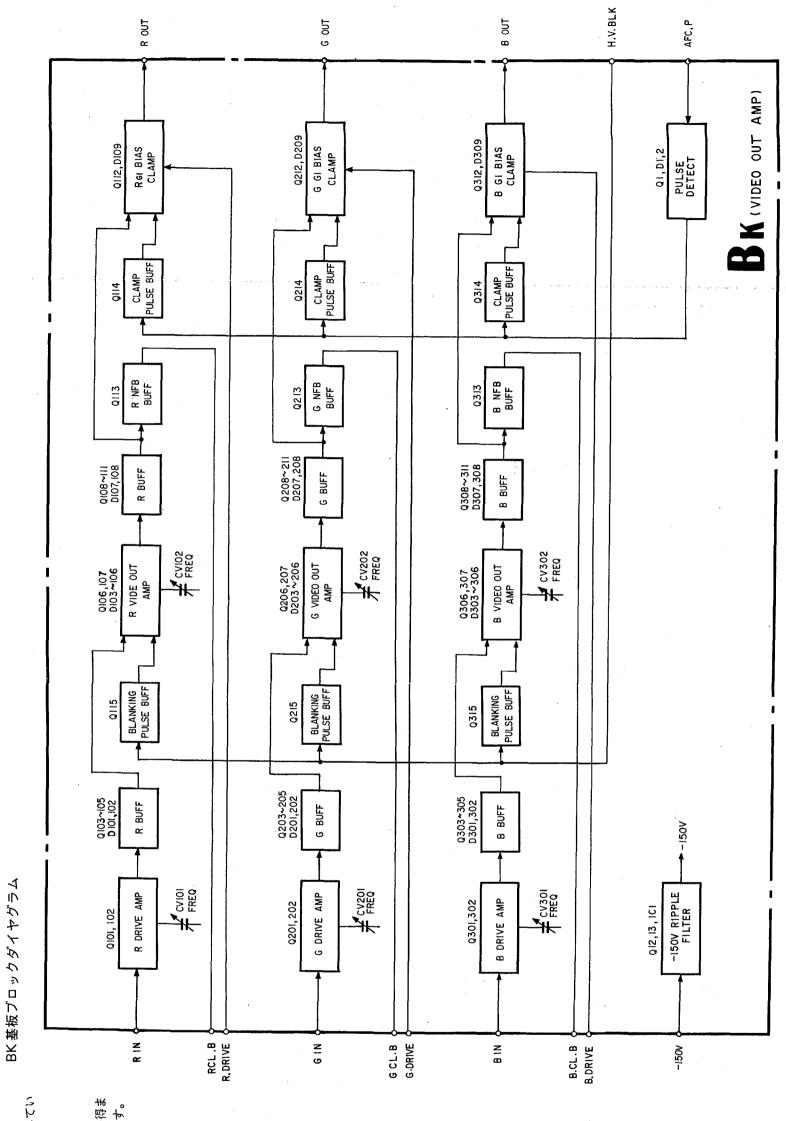
0.5

H. BLK. P. HV. BLK. P. DRIVE. P. C. BLK. P

C. CL. P H. SYNC

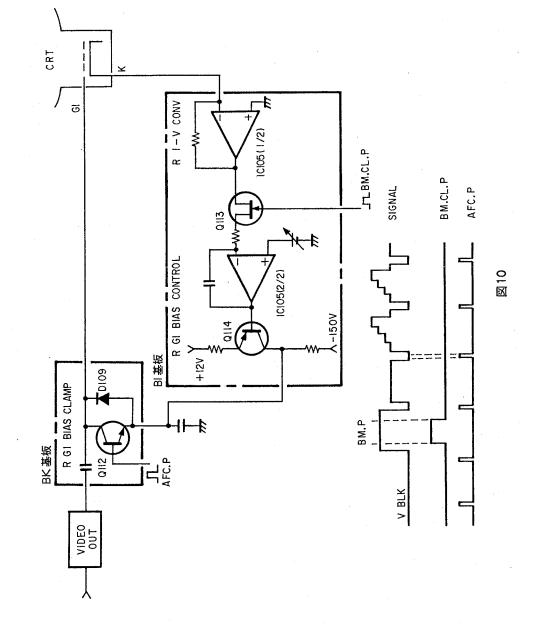
3-6-1. R DRIVE AMP, R BUFF 約2倍のAMPで最終段のVIDEO OUTをドライブしてい

3-6-2. R VIDEO AMP, R BUFF 約14倍のAMPでCRTのG1ドライブに必要な振幅を得ま す。また, 同時にBLANKING PULSEの加算をします。



# 3-7. BI, BK基板 電流検出回路 (G, Bも同様です)

3-7-1. カソード電流検出と I-V転換(BI基板) IC105(1/2)によりカソード電流を電圧に転換しています。 3-7-2. R G1 BIAS CONTROL (BI基板) Q113ゲートにはBM.CL.Pが加えられ, Q113でサンプリングされた BM.Pの電圧 (カソード電流) と+入力の基準電圧が比較され, 一致するようにQ114のベースをコントロールナナ 3-7-3. R G1 BIAS CONTROL (BK基板) BI 基板 Q114コレクター電圧をクランプ電圧とし, 信号を Q112でクランプします。



### 3-8-1. 概要

遅延された信号(以下2H信号)になります。0H,1H,2H 3ラインダイナミックくし型フィルター(図11) 入力された VIDEO 信号は,ローパスフィルターで帯域制限 されます (以下 0H信号)。 0H信号は, 1H遅延回路で 1H (63. 556 µsec) 遅延された信号(以下1H信号)と, さらに1H 信号は, それぞれバンドパスフィルター (中心周波数:fs) で帯域制限され, 1/2 (140nsec) 遅延されます。

1H信号は、さらに 1/2運延され、こうして得られたOH+1/2 1H, 1H + λ/2, 1H + λ, 2H + λ/2 (ブロックダイヤグ ラムの④®©©®) の各点の信号は, 相関回路 (IC501) で クロマ信号のみに分離されます。

**輝度信号は,1H信号よりクロマ信号を減算して分離されま** 

## • 2ラインシンプルくし型フィルター

して分離され、輝度信号は、0H信号よりクロマ信号を減算 クロマ信号は, 先のOH + 1/2と1H + 1/2の信号を减算 することで分離されます。

### • 1H 遅延回路 (図12)

1H 遅延回路は, CCD 遅延線 2 個で構成され, 並列使用して 1H (63.556 msec) 信号遅延を行います。

## バンドパスフィルター (図13)

バンドパスフィルターは, 遅延線で構成され, 群遅延が一定 で帯域制限を行います。

## 相関回路 (IC501) (図14)

相関回路は, エミッター共通のリミッター回路により構成さ れ、クロマ信号の分離を行います。

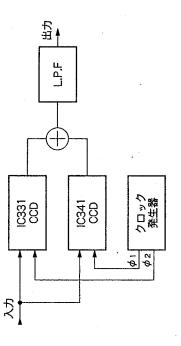
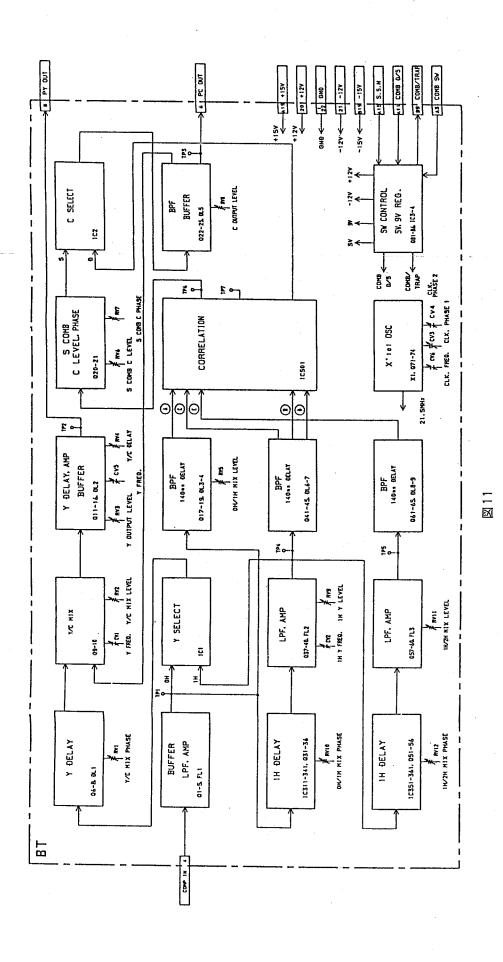
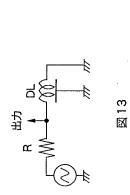
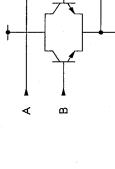
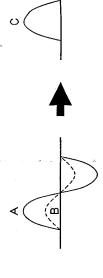


図 12









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図 7

3-17(J)

### BC基板 . მ-მ

## デモジュレーター回路, Y-トラップ回路

(BUFF.) に入力された後, Y系の3.58MHzトラップ回路 BA 基板より供給される, コンポジット・ビデオ信号は, Q1 と,クロマ系のバンド・パス・フィルターに分配されます。

Q1のエミッターより得られる, コンポジット・ビデオ信号は, クロマ・バンド・パス・フィルター回路 (R18, C7, 8, 3-9-1. クロマ・バンド・パス・フィルター回路

サブキャリア周波数 (3.58MHz) に調整されており, クロ このバンド・パス・フィルターの中心周波数は, L3により マ信号(サブキャリア成分)のみがQ5のエミッターに出力 L3, Q5) に入力されます。 されます。

ここでは, COMB FILTER回路 (BB基板) との切換えを この時IC2には、COMB FILTER回路より供給されたクロ 行っており, サブコントロールパネルの YC SEP ポタンを, が動作し, Q5のベースが-12V となりカット・オフします。 COMB側にすると, COMB SWITCH回路 (Q103, 104) マ信号 (PURE C) が基板端子 (A6, B6) より導かれます

## 3-9-2. レジデュアル・スイッチ回路

Q5に出力されたクロマ信号は,アナログ・スイッチャーIC2 BJ基板のSW1をOFFにすると,コントロール端子には,Low Level信号 (DC OV) が入力され,スクリーニングは行わ (のピン) に入力されます。スイッチャのコントロール結子 (③ピン) には BJ 基板の SW1 がON になっている時, 水平 SYNC と同位相のパルス (図15) が入力され、これによ て水平SYNCと期間のスクリーニングが行われます。

プレベルが変動し、色再現の変化としてサブキャリアの洩 のスイッチのON/OFFの切換えにより、色差信号のクラ ビデオ信号に, サブキャリア成分の洩れが生じていると, の確認が可能となります。

れなくなり、レジデュアル・スイッチ回路は動作しなくなり

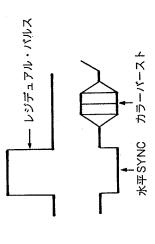


図15 レジデュアル・パルスの位相

## クロマ・アンプ回路

レジデュアル・スイッチ回路 (IC2:④ピン) より導かれた **クロマ信号は, 抵抗R85, 86で分圧されてクロマ・アンプ回** 路(Q6, 7, 8) に入力されます。

このアンプのゲインは一倍で,同相信号と逆相信号の2信号 Y Input (IC1:③ピン) に, 逆相出力をB-Y Input (IC1 を出力し, 同相出力を次に続くデモジュレーター回路のRー ②ピン)に入力します。

## 位相コントロール回路

クロマ信号は, 位相コントロール回路 (Q9, 10, 11, 12, D2) に入力されます。この回路では可変容量ダイオード (D2) を 用いて、カラーバースト(クロマ信号)の位相をコントロー レジデュアル・スイッチ回路 (IC2:④ピン) より導かれた ルしています。 D2のアノード電圧は, RV2により与えられ, この半固定抵 抗で Phase のプリ・セット調整を行います。

右側フロントパネルのPHASEボリュームを回すと, 基板端 子A13 (Phase Control信号) のDCレベルが可変されま ®ピン) に入力され, これを経てD2のカソードに導かれま す。このPhase Control信号は,アナログスイッチャー (IC3:

これによりPhase Control信号の変化に応じて,クロマ信 号のバースト位相 (Phase) がコントロールされます。

アナログ・スイッチャIC3 (2/3) は, ドロワー内のSYSTEM SW でNTSCが指定されている時だけ, 入力ピン⑩と出力ピ ン⑭間を導通し、それ以外の時は、⑬ピンをOPENの状態に 位相制御されたクロマ信号は, Q12のエミッターより出力さ れ, IC3 (1/3) でバースト信号のみを次に続くデモジュレー ター回路のBurst Input (IC1⑪ピン) に導かれます。

### NTSC デモジュレーター回路 3-9-5.

ロマ信号, ⑪ピンにカラーバースト信号, ⑩ピンにBurst Gate Pulse (B.G.P) を入力することによって, @, @ピンからそ IC1は, クロマ処理用ICです。このIC1①, ②, ③ピンにク れぞれR-Y, B-Yの色差信号が得られます。

この検波回路の復調軸は,R-Y軸及びB-Y軸であり,両 者の位相角が90°となるようにCV1を調整します。

IC1 ⑤, ⑥, ①, ◎ピン及び, それに付随した回路によって 3.58MHz Oscillator (Voltage Controled Oscillator) を 構成しており, このフリーラン周波数がサブキャリア周波数 (3.579545MHz) になるようにCV2を調整します。

IC2®, ⑩ピン及び, それに小随した回路によってAPC (Auto Phase Control)回路を構成し、ACOを制御しています。 RV3により回路のバランス調整を行います。

このICによって復調された色尭信号は次のQ16, 17 (R-Y), Q19, 20 (B-Y) で構成されたLow Pass Filterに入力 され高周波成分の除去を行い, バッファーQ18~(R-Y), Q21-Y)を経て,他基板に供給されます。

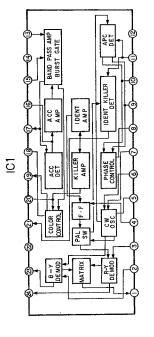


図16 Chroma 処理用IC内BLOCK図

Q1のエミッターより導かれた, コンポジット・ビデオ信号 3-9-6. 3.58MHzトラップ, 位相補正, Y-Delay 補正回路 は3.58MHzトラップ回路 (R5, 6, 7, C1, L1) に入力さ れます。

この回路の共振周波数がサブキャリア周波数となるように トラップ回路の出力では、サブキャリア信号が除去された Y L1を調整します。

トラップ回路により生じた高周波成分の位和遅れをここで 信号 (輝度信号) が得られ, 位相補正回路 (Q2, R8, 9, 10, L2, C4) に入力されます。

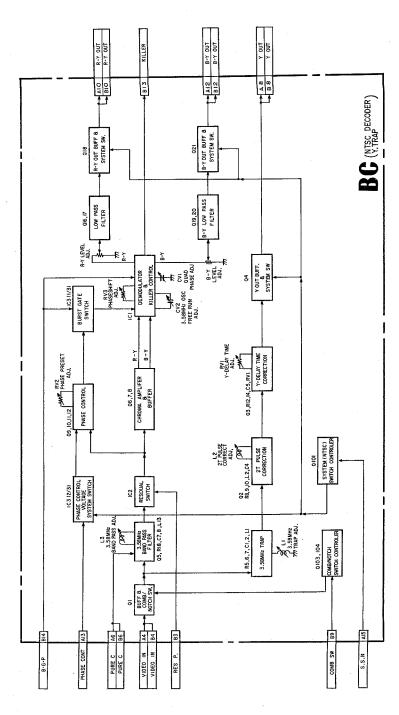
RV1) 次にY-Delay Time 補正回路 (Q3, R12, 14, C5, に入力して, CHROMINANCE/LUMINANCE ERRORを補正しています。 補正しています。

補正された信号は,バッファー (Q4) を経て,他芃板に供給 されます。

## 3-9-7. SYSTEM SWITCH回路

Q101がカット・オフして電源の12Vラインの一部が供給 ター (Q4, 18, 21) のベース電位が-12V となり, 各トラ ンジスターはカット・オフして信号は出力されなくなりま ドロワー内のSYSTEM SWでNTSCが選択されない場合, されず, 各信号 (Y, R-Y, B-Y) の出力段のトランジス

## BC 基板ブロックダイヤグラム



従ってCRT Focus は優れていますが, 基本的に図17に示 Aperture Grilleまたは, Super Fine Pitch Trinitron のコンバーゼンスシステムの概要について述べます。本機 3-10-1. コンバーゼンスシステム説明 本機に使用のSuper Fine Pitch One Gun 3-Beam に用いられているDYはCRTのBeam Spotの歪を避ける ため、その磁界分布はほぼ斉一です。

X軸方向横ミスコン すような, 横方向ミスコンが生じます。 Y軸方向横ミスコン 8 6 8

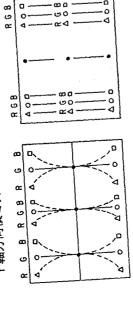


図17

プレートであり, 静電方式のコンバーゼンスコントロールが 採用出来ます。この結果電磁方式で生ずる Beam Spotの 図18にGUN構造を示すG6がコンバーゼンスコントロール Super Fine Pitch Trinitronの特徴である静電方式コン 3-10-2. 静電方式コンバーゼンスシステム バーゼンスシステムを説明します。 劣下がありません。

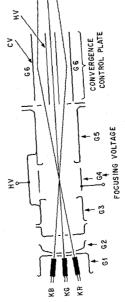
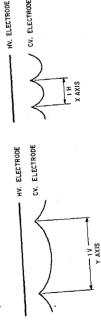


図18

す。楠正波形発生回路はDB基板で,また出力AMPはEB基

を持つのでNTCの磁束はG Beamには平行で影響はあり ませんが, B, R Beamは維方向 (力方向は逆) に移動しま

> た、X軸方向の横ミスコンはコンバープレートにH周期のパ ラボラ電圧を加えることにより補正出来ます。(図19参照) ここで前記のY軸方向横ミスコンはコンバープレートにV 周期のパラボラ電圧を加えることにより補正出来ます。ま 3-10-3. コンバーゼンス補正回路 (横方向コンバーゼンス)



:す。このシステムにより効率よくY軸方向横ミスコ スで伝送するのは効率的ではありません。そこで図20のような日周期波形を発生させ,トランスの二次側にはダイオー ドピーククランプ回路を設け, V 周期波形を二次側に伝達し 補正システムとして∇周期の波形とH周期の波形をトラン 本機のCV電極への電圧供給はトランス方式を用いています。 ンとX軸横ミスコンを補正しています。 んじま

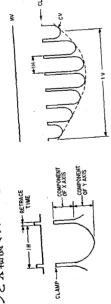


図20

このようなシステムで横方向ミスコンは補正しています。補正波形発生回路は DB 基板で, また出力 AMP は EB 基板で説明します。

3-10-4.維方向コンパーゼンス 維方向ミスコンは GUN 構造が IN-LINE に設計されている ため、原理的にはないがCRT, DY のバラッキや地磁気等に り,極わずかであるが生じる縦方向ミスコンもX軸方向と 

りR, BのビームがCYにて総方向に差割で割へこった。 ります。G Beamは中央にあり、左右CYの磁束がキャンセ ルするので動きません。 Y軸方向の総ミスコンには図21 CRT G2-G3の中央部に フイルを巻き (Neck Twist Coil) 補正しています。原理 コイルを巻き (Neck Twist Coil) 補正しています。原理 X軸方向の織方向ミスコンはコンバーゼンスヨーク (CY) を使用しています。図 21 は CRT Neck 後方より見た図であ R, BのビームがCYにて縦方向に差動で動くことがわか

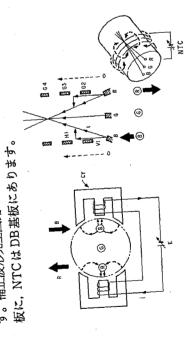
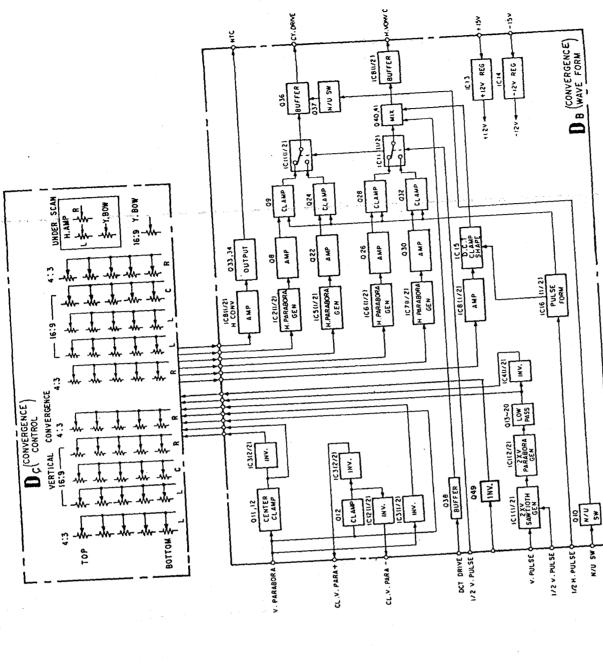


図21

DB 基板及び DC 基板ブロックダイヤグラム

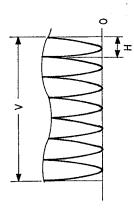


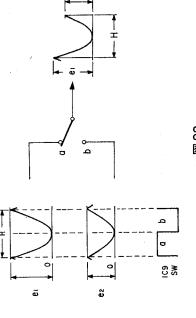
3-22(J)

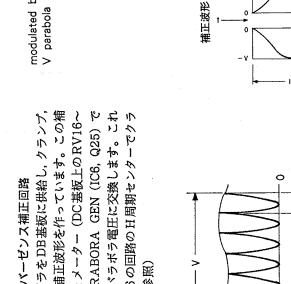
図19

本機のコンバーゼンスは水平, 垂直ともにCRT画面上の16 点について補正することが出来ます。また, 調整用のポテン ショメーターはCRT面に対応して配置されています。 コンパーゼンス補正波形 (DB 基板)

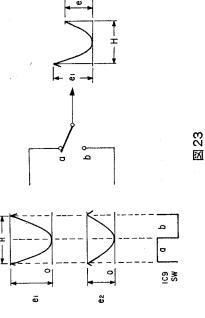
正電圧を調整用ポテンショメーター (DC基板上のRV16〜 合成電圧値に比例したH.パラボラ電圧に交換します。これ を Q26 で増幅し Q28, IC6 の回路の H 周期センターでクラ DA 基板より V 周期パラボラを DB 基板に供給し, クランプ INV, スイッチをし, 図の補正波形を作っています。この補 RV20) で合成し, H PARABORA GEN (IC6, Q25) て 3-10-6. 横方向ミスコンバーゼンス補正回路 ンプしています。(図22参照)







また,DC 基板上の RV26~RV30 の調整用ポテンショメー ターでも同様にH周期のパラボラ電圧を得ています。この 2つの出力をアナログ SW にて 1/2H の周期で切換えてい ます。この結果左右の調整は独立に出来ます。(図23参照)



また,CRT 中央部の ADP 用のポテンショメーター(DC基 スに変換され、上記のアナログ SW の出力パラボラと合成さ 板上のRV21~RV25)で合成された電圧は, H周期でパル れます。(Q40,41)(図24参照)

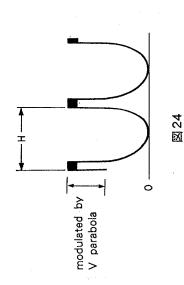
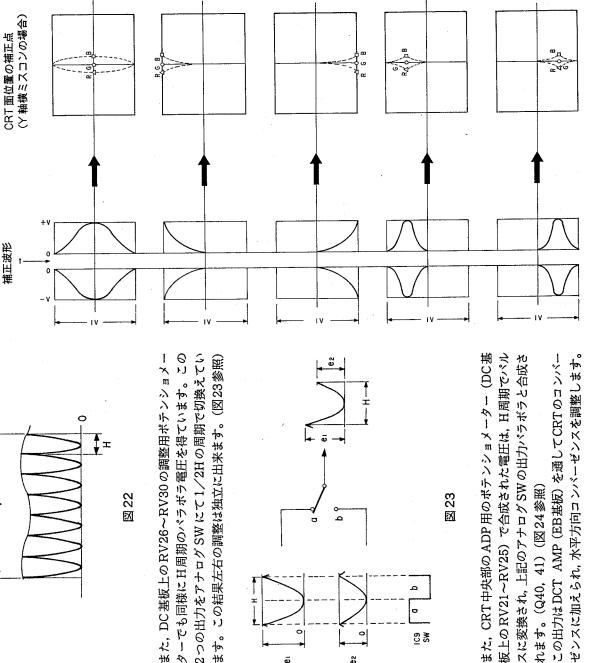


図22



この出力はDCT AMP (EB基板)を通してCRTのコンバー

スの左右回路と同一の回路で出周期パラボラに変換され、Q35 のバッファーを通り, EB 抹板の AMP よりコンバーゼンス V 方向コンバーゼンスの左右回路は, H方向のコンバーゼン ヨークに供給され V 方向左右のコンバーゼンスを補正しま 3-10-7. 縦(V) 方向ミスコンバーゼンス補正回路

V方向コンバーゼンスの中央部 (Y軸上) はポテンショメー ターで合成された調整電圧を増幅器 (IC8 (2/1) Q33,34) C) に供給し, V 方向中央部のコンバーゼンス補正をしてい にてCRT NECKに装着されたNeck Twist Coil (N.T.

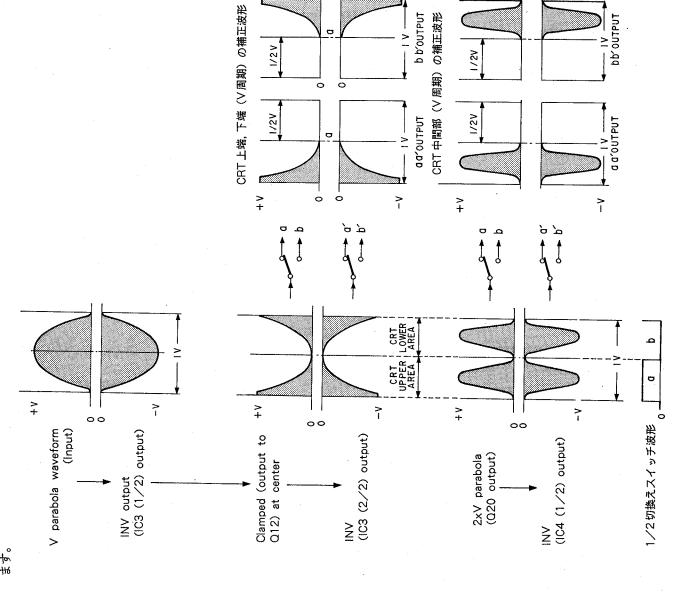


図25

3-24(J)

図26

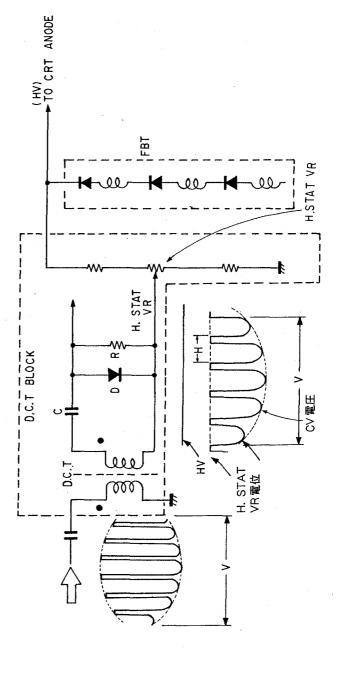
## V.OUT, CONVERGENCE OUT

3-11-1. 垂直出力回路 垂直出力回路はQ1~Q5からなるDC直結のSEPP AMPとQ7.8からなる帰線区電圧のブーストアップ回路より構成されています。このSEPP AMPの入力としてはDA 基板で作られた V.SawtoothとT & B PINCUSHION 歪補正用電圧が入力されます。このSEPP AMPは負荷の V.DYに直結であるので, V.CENT回路は V.Sawtoothに土電源よりDCを重畳するのみでよいです。

ブーストアップ回路はVD信号でONされ垂直帰線区間にエネルギーを供給しています。 3-11-2. C.Y (Convergence Yoke) 出力回路 C.Y 出力回路はQ9~Q13からなるDC直結のSEPP AMP から構成され負荷C.Y に直結されている総方向ミスコン補 正の出力回路です。入力補正電圧はQB基板より供給されて

## 3-11-3. D.C.T (Dynamic Convergence Transformer) 出力回路

D.C.T 出力回路は Q14~Q19 からなる SEPP AMPであり出力回路は高圧絶縁用のD.C.T であるのでAC結合されています。以下に D.C.T 出力回路と D.C.T 二次側の基本構成を示します。

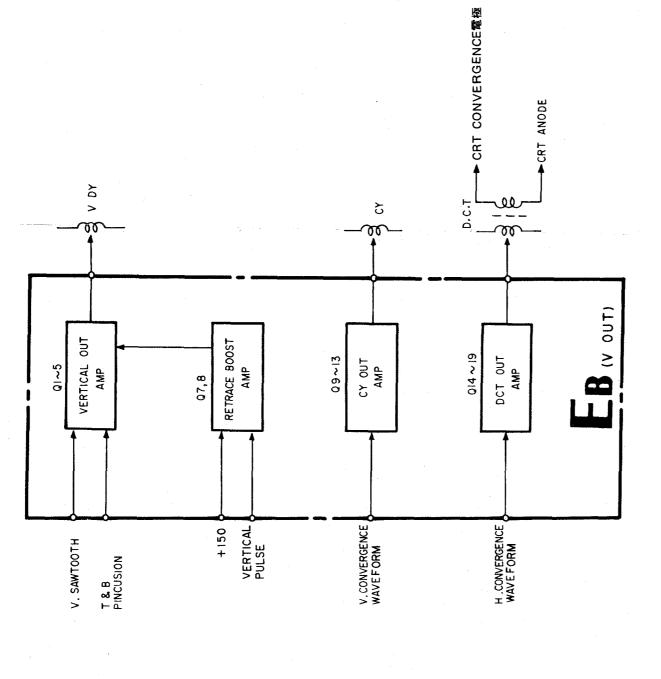


.

図2

3-25(J)

EB 基板ブロックダイヤグラム



### 3-12. EA基板

### 水平出力

### 3-12-1. 水平偏向回路

水平偏向回路は, Q13にDA 基板で作られたH drive Pulseが供給され, Q13でT4をDriveし, Q14のH outをコントロールしています。

AFC PULSE

H outへの電源供給は+150Vの効率UPを計るために, IC1とQ11にてDC-DCコンバーターし, 結合トランス (H.O.T)を経てH.O.Tに供給されます。

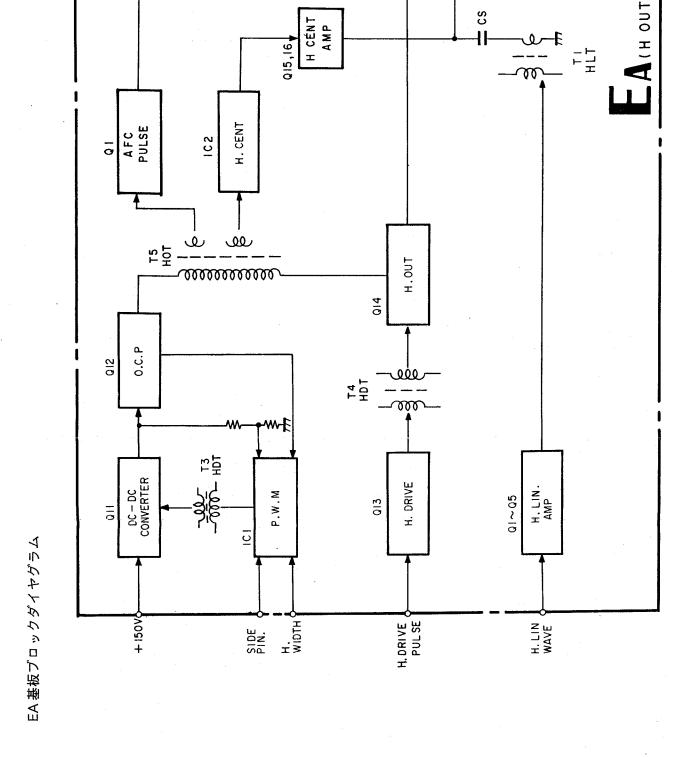
IC1はエラーAmpとF.W.M.回路からなり, エラーアンプにはサイド PINCUSHION 補正波形及びH.WIDTH調整電圧がDA 基板より供給されてDC-DCコンバーター出力をコントロールしています。

## 3-12-2. H.センター回路

H.センター回路は、T5 (H.O.T) の二次出力より±電源を作り、H.センター電源を流しています。またラスターのY 弓曲りも補正しています。

## 3-12-3. H. LINEARITY回路

H.LIN回路はDA基板で作られたH.LIN補正波形をQ1~Q5のSEPP AMPで増幅し、T1よりH-DYに供給しています。



H DY

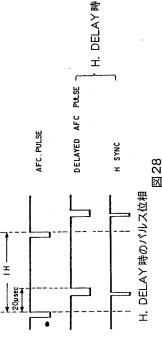
\_

本機のH.DELAY は水平 AFC回路の比較波形を遅延させる ことにより実現しています。(図28参照) 3-13-1. H.DELAY及びAFC回路

にし、IC4の④ピン(AFC比較波形端子)に加えAFC検波 で約20 msec運らせこれをL1・C14の積分器でノコギリ波 EA(水平出力回路)基板のH.O.T(水平出力トランス)よ り波形成形したH.AFC PULSEをDA基板のIC1 (2/2)

を行っています。

られます。本機ではこのフィルターの時定数を切換えるこ また, AFC検波の出力はIC4の②ピンからフィルターのC12, R10, C15を通りH.OSCのコントロール端子@ピンに加え とにより, AFC時定数を決定しています。この回路がS1 R13, 14, 15, C17, 18です。



### 3-13-2. H.LIN回路

なわちIC5 (1/2) でH周期のノコギリ波を波形成形し、こ のH周期ノコギリ波をIC6 (1/2) で積分し, H周期パラボ ラ波を波形成形し, IC7 のバランスモジュレーターで垂直周 サーを変調し水平リニアリティ及びいわゆる中間ピン(CRT 本機ではH.LINEALITY を電気的に波形補正しています。す 期パラボラで変調をかけ先のH周期ノコギリをIC5で加算 し,EA(水平出力回路)基板の AMP を通し S 字コンデン ション歪率が変わる現象) 歪を補正しています。 (図29参照) 面がフラットに近づくと CRT 左右両端と中央部のピンク



IC10(2/2) OUT

(C/1)()()

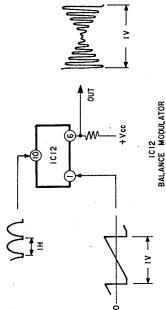
OG COLLECTOR

## 上下 PINCUSHION 歪補正回路

ちH周期波形に対し,V-DYは積分器として働き偏向に必要 ギリ波を成形し,またIC11 (2/2) でH周期パラボラを成 H.LIN回路で成形されたH周期ノコギリ波をIC10でコンパ な電流波形は,約1/2H遅れるので位相をあらかじめ1/2H レートし、T & BのH.PHASEのADJを行います。すなわ 形し, IC12 にて垂直周期のノコギリ波にて変衝変調 コンパレートされたパルスにてIC11 (1/2) でH周期ノコ あまり進める必要があります。(図30参照)

(Balanced Modulation) しEB (垂直出力) 基板に供給

しています。 (図31参照)



S字電圧

+Vcc

オペ AMP を用いた積分回路

50Hz/60Hz FIELD 自動選別回路

すなわちIC18がFIELD周波数の自動選別ICであり、このHカバア年車周周期の積分器の時定数を切換え (IC13) てい 本機ではNTSC, PAL等FIELD周波数の異なるシステムも 可能にするため, 垂直周波数の自動選別回路です。

> 2) のコンパレーターに加え,1/2H DELAYしたHパル スを得, 1/2H DELAY した H 周期/コギリ波を IC9 (1

H.LIN回路で波形成形したH周期ノコギリ波を, IC8 (1,

**水平ブレンキング成形回路** 

3-13-3.

コンパレーターに加え、水平帰線の始まる直前のパルスを得

てこれにてH.BLKの前端を決め, IC1 (1/2)のJ-K FF

でH.BLK幅を決めています。

/2)の積分器で形成しています。これをIC10 (1/2)の

### SCAN MODE切換回路 3-13-6.

本機ではNORMAL SCAN/UNDER SCAN/SET UP SCANの3つのモードで最適な偏向を行うため H.WIDTH, V.HEIGHT, SIDE PIN CUSHION, T & B PINCUSHION が各 SCAN 時に独立するようにレベル切換えを行っていま す。(切換えスイッチがIC4, 15, 16でBUFFERがIC17,

垂直波形補正及びSIDE PIN波形補正回路 3-13-7.

V.SYNCをReset信号としてV周期の積分器をはたらかせ ています。V.DRIVE波形補正はIC19 (1/2) で作られた ています。V 周期ノコギリ波はIC19 (1/2) で作られます。 これをIC9 (2/2) で積分しV周期パラボラを得てこれを SHIFT してIC20 (1/2) にて積分しSin (正弦) 近似波を (1/2) で積分しSIDE PINCUSHION歪補正用の波形を得 V 周期ノコギリ波とIC22 (1/2) で作られた Sin 近似波を IC22で加算しています。またIC22 (1/2) でV.LINEの 上下BALANCE, IC22 (2/2) で V.CENT を調整するこ 得ています。これに反転されたV周期ノコギリ波を加えIC21 とが出来ます。(図32参照)

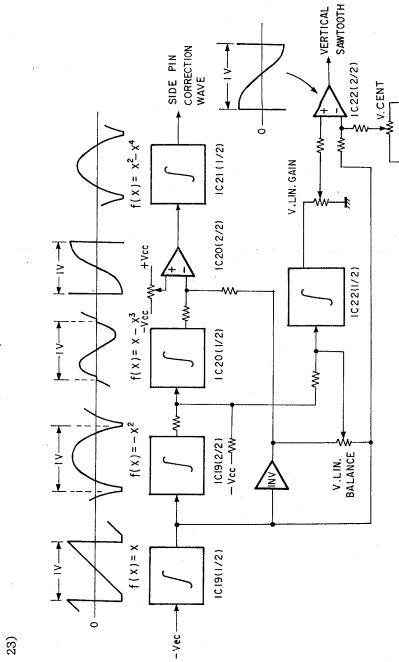
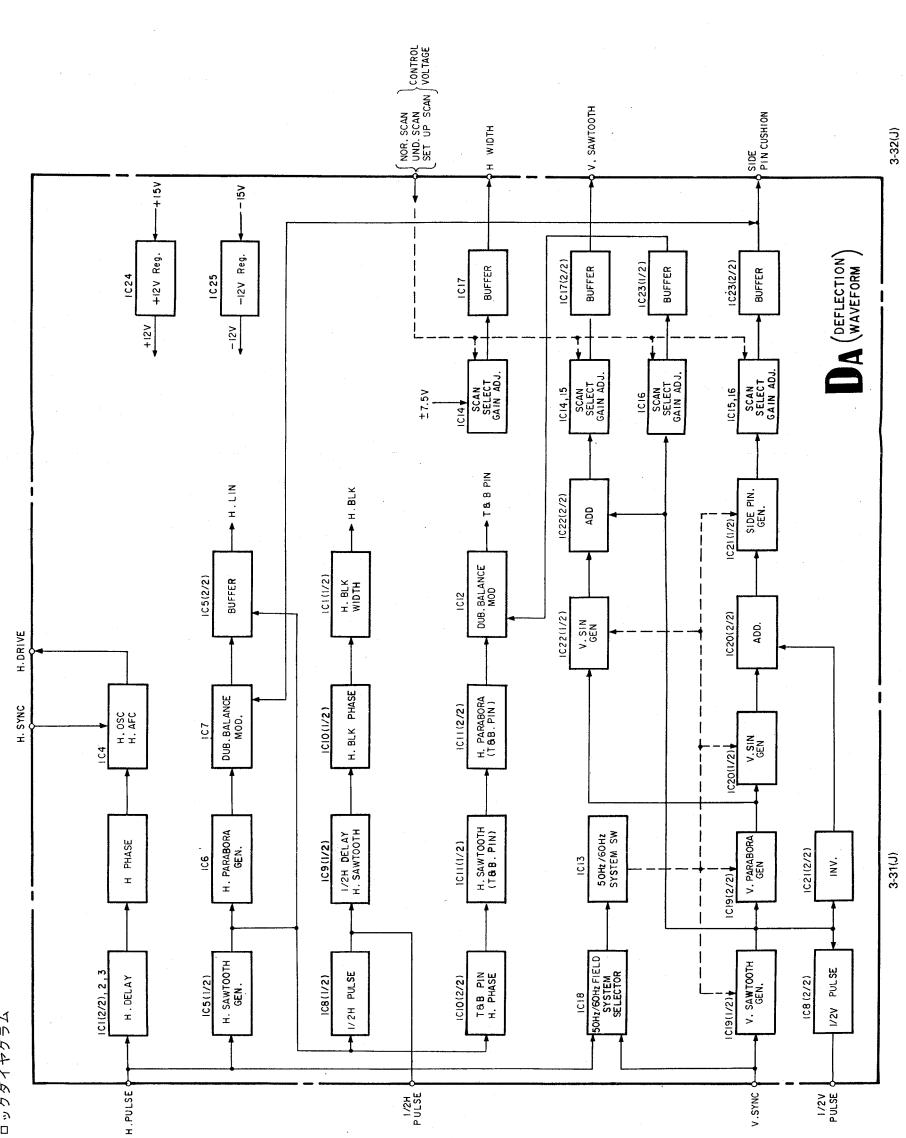


図32

図 31

水平リニアリティー補正波形

図29

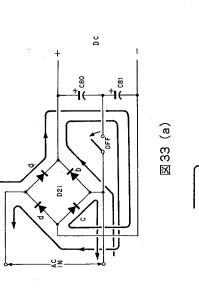


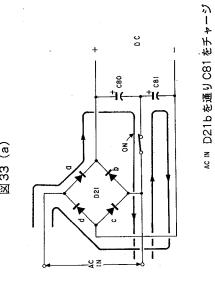
DA 基板ブロックダイヤグラム

## 3-14-1. AC電源整流回路

/120V時に切換えて使用します。AC100/120V時には整 電源整流部は, AC INPUT SELECT SWによりAC100 流回路D21, C80, 81は倍電圧整流回路として働きます。 (図33 (a) 参照)

AC220/240V時には整流回路D21, C80, 81はブリッジ 整流回路として働きます。(図33(b)参照)





0

D21aを通り C80 をチャージ

ĄÇ

図33 (P)

### 3-14-2. デガウス回路

AC INPUT SELECT SW によりデガウス用正極性サー ミスターのPTH2とPTH1を切換えます。デガウス電流は リレーRY1によりON/OFFされます。

とも、時定数回路により数秒間デガウス終了まで回路は保持 リレー駆動用のTr Q12をONさせるようにデガウス回路 ます。また, AC-SW ON後数分後にPTHが冷えた状態で マニュアルデガウス (前面パネルのデガウス SW で) が働き ます。回路的にはR88, 91, C74の時定数回路により, AC-SW デガウス回路は, AC-SW ON時にAUTOデガウスが働き ON時及びマニュアルデガウス SW-ON時に Q11 を ON させ, を構成しています。マニュアルデガウスSWは押し続けなく

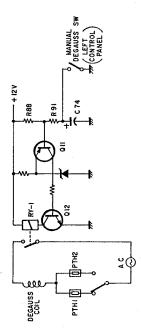


図34

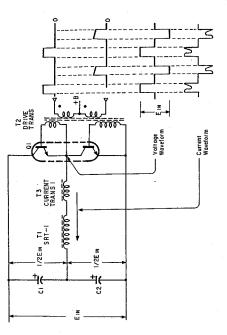
### スターター回路

IC1及びT4によりブロッキングオシレーターを構成し,AC 電源ON時に働きT4の二次回路側のD7, C57で整流された 電圧はスタート整流回路 (Q7, 8, 9) により, AC50~70V (AC110/120V時) でレギュレーター回路IC (IC2及びIC3) に電圧を供給します。

D20を通し,レギュレーター回路ICに電圧が供給されます。 巻線◎~@ピンよりIC1 にブロッキングオンレーターを停止 ここでレギュレーター回路が働き始め + 15V ラインが働き, またスイッチングレギュレータートランスの SRT2 の一次 させるための電圧が供給されます。

### スイッチングフボュワーター回路 3-14-4.

基本構成は図34に示すハーフブリッジ型のスイッチング電 にてスイッチングしています。このスイッチング電流がT1 15V, ±18V, +5Vの電圧を供給し, IC3, T6, 7, 5, Q2 源であり,整流出力電圧E1をC1とC2にて分圧し, Tr Q1 (SRT-1) T2 (CURRENT TRANS1) を流れ,二次側に パルス幅制御された電圧が供給されます。電圧制御及び過 電流制御をIC2, 3で行います。IC2, T1, 2, 3, Q1側が± 側が±150Vを負荷側に電圧を供給します。

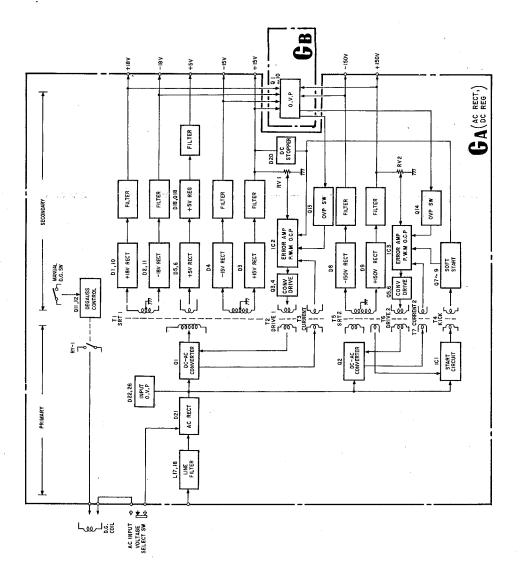


**図** 35

### 出力過電圧プロテクター 3-14-5.

GA 基板上のGB 基板は、何らかの理由で出力電圧が定格出 デンサ)をショートし, レギュレーターをストップし, 回路 力より大きくなった場合IC2, 3のCT (周波数決定用コン 保護する回路です。

## GA, GB 基板プロックダイヤグラム



3-34(1)

### 高圧レギュレータ

本機の高圧レギュレーターは消費電力を軽減するため,DC コンバーター方式の電源供給回路を使用しています。高圧 に供給される電圧はQ102のON/OFFにより制御されます。 IC4 (2/2) のBufferを通して, IC1に入力されます。IC1 は外部に設けられた基準電圧と,この検出電圧を比較し(誤 差増幅),PWIM変調を行います。Q102はPWIM変調された HV 電圧は検出電圧のレベルを変えることによって調整され IC1出力によって駆動され,FBT駆動回路 (Q103, 108, FBT HV 電圧を直接 HVR で抵抗分割して得られる検出電圧は レギュレーターの動作は概ね次のようになっています。

次に,HV 電圧が下がるとHV 出力電圧も下がります。この 時 IC1 の PWM 出力は Q102 スイッチング Trの ON 期間か 広がるよう設定されています。

Q102でスイッチングされた電圧は結合チョーク (LOT) を 介し,FBT駆動用コンバーター回路に供給されます。また FBT 駆動回路の Q103 出力 Tr のコレクター電流の大小 PWM 変調器は H.Pulse により同期がかけられているため Q102のON期間に依存します。従ってQ102のON期間が 長くなると, Q103コレクター電流は増加し, C124の電位 が上昇します。

Q103 がOFF すると, LOT.FBT の合成インダクタンス C108の共振により, フライバックパルスが発生し, それな 二次側に伝達され HV 電圧を発生します。(図36参照)

## 3-15-1. 南圧しギュレーター

下がるのでQ102のON時間が広くなります。その結果Q103 のコレクター電流のピーク電流が増加するので, FBT を通 ってC124を蓄積するエネルギーは大きくなり, C124の電 Q102, 107, IC4 (2/2), IC1 (P.W.M制御用IC), HVF CRT 電流が増加し高圧が下がると HVR の検出端子電圧か Q103, C108, 124, FBT は高圧コンバーター回路を構成 (HCT Block) でレギュレーターを構成しています。 位が上がって高圧はレギュレートされます。

HパルスからQ109, 110, 111, 112, R143, C128, R144 60 %のパルスにより Q103がスイッチされ,OFF した時に C127, D111からなる時定数回路で作られます。On Dut LOT, FBT, C108の共振により, Q103のコレクターに、 ライバックパルスを発生します。 ています。

## 3-15-2. 高圧プロテクター

通してIC2 (2/2)の①入力端子に接続されており、この端 DCT Block内に二つある高圧検出用抵抗 (HVR) の一方 子電圧が高圧の上昇により動作基準電圧である⊝入力端子 よりも高くなると,このコンパレーターの出力がHighとな りD207を通してD206 (SCR) をgate onさせて高圧コ ンバーターのドライブパルスを遮断するので高圧出力回路 D215のツェナー電圧を抵抗分割するだけでなく, FBTの® の検出端子がR245, C216からなるLow Pass Filterを は停止します。また,このプロテクターの動作基準電圧は

## 3-15-3.

高圧電流プロテクターは, FBTの二次巻線側を流れる電流 をFBTの®ピンに接続されたR1 (or R4), R5 (or R6) (PB基板) にて電圧として検出しています。

端子電圧より低くなるような高圧電流が流れと, コンパレー ターの出力がHighとなり, D205 (or D206:SCR) をgate (or IC3 (1/2)) O ⊖入力端子電圧が下がって行き動作基準電圧である⊕入力 on させて高圧コンバーターのドライブパルスを遮断するの 高圧電流が増加すると, IC2 (1/2), で, 高圧出力回路は停止します。

## 3-15-4. CRTプロテクタ

の焼付を保護するための回路です。

Q103のコレクターパルス電圧をダイオード整流し, Q104, IC3 (2/2), Q106で出力410Vのレギュレーターを構成し 3-15-5. スクリーン (G2) 電圧レギュレータ ています。

Q105は BI 基板の G2 コントロール回路と連動して, CRT

G2に適切な電圧が常に与えられるようになっています。

3-15-6. CRT ヒーター電圧

ピンに(ABL)電圧を加算しています。

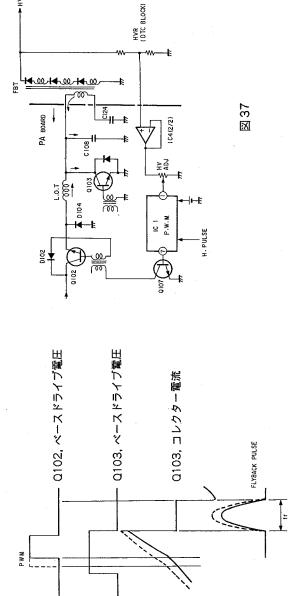
## 高圧電流プロテクター

IC2 (1/2), IC3 (1/2) はコンパレーターであり, ダブル Safety 回路となっています。

何らかの原因で垂直偏向回路が停止した時に,CRT蛍光面

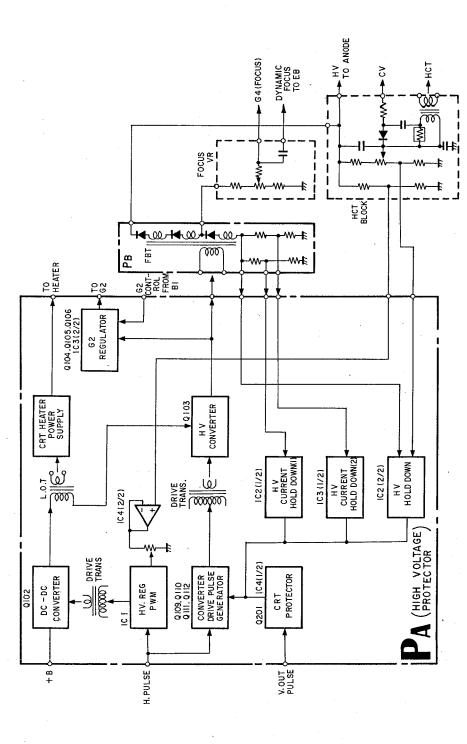
より高くなること, このコンパレーターの出力がHighとな 垂直偏向回路が停止すると V. Out パルスがなくなるため Q201がOFFしてR209, R208を通してC202が充電され トコンパレーターIC4 (1/2) の⊕入力端子が⊕入力端子 り, Q202がONして高圧コンバーター回路のドライブパル スを遮断するので, 高圧出力回路は停止します。

L.O.T の二次巻線から CRT のヒーター電圧を作っている R107により電圧調整されます、



PA 基板ブロックダイヤグラム

図 36



3-36(1)

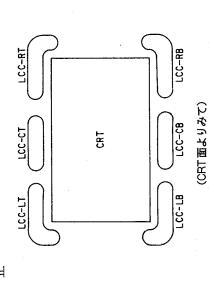
## ビーム・ランディング補正回路 (R1, R2基板) 3-16.

れるようになっています。このビームランディング補正は ことによって常にビームランディングが良好な状態に保た 当モニターでは、CRTの周辺に下図に示すような6個のビー ムランディング補正コイル (以上LCC = Landing Correct Coilと呼ぶ)を取付け、このコイルに適当な補正電流を流す 次の項目について行っています。

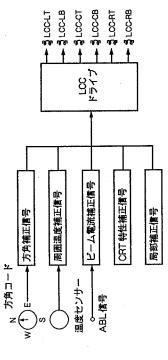
- モニターの向く方角(水平地磁気)によって変化する ランディングの補正
  - 直地磁気に関してはモニター内部のピュリティマグネ 注:この回路では垂直地磁気の補正は行っていません。
    - 周囲温度の変化に伴うランディング変化の補正 ットの調整で行います。 લં છ
- CRT のランディング特性の補正

平均ビーム電流変化に伴うランディング変化の補正

- 4. ĸ.
- 周辺磁界の局部的な乱れによるランディング変化の補

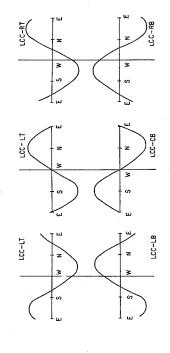


下図に補正回路の基本構成を示し, 以下順に各ブロックの説 明をします。



補正回路の基本構成

ムランディングの状態が変化します。この時のランディン グ変化は6個のLCCの極性を適当にとり,各コイルに下図 に示すような方角にてって正弦波的に変化する電流を流す 水平地磁気の影響でモニター本体の向く方角によってビー ことによって補正出来ます。



### LCCの方角補正電流

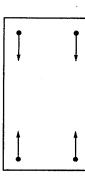
V周期毎に0と1とが交互にIC2ののピンより出力されてい 本回路ではこの補正波形のうち LCC-LT, LCC-RBの2つの 出力され, 内部でデータラッチされます。アナログ出力はバ います。LCC-LB, LCC-RTの補正信号はIC5 2/2, IC6 タがV周期毎に交互にIC4のDUAL D/Aコンバーターに :/2でそれぞれLCC-LT, LCC-RBの信号を反転して得て 波形の1/16方位毎のデータを下図のようにIC3のメモリ タがROMのアドレスA1~A4に対応し, 最小アドレスA0は »ファを通して楠正信号としてLCC ドライブ段に送られて に記憶しています。W 基板のSW1からの4bitの方角デー ます。このようにしてLCC-LTとLCC-RBの補正信号デー

RTの補正波形をIC7 1/2で加算して得,それを更に反転 してLCC-CT補正波形を作っています。これらの波形の振 これらの波形の振幅はDAコンバーター基準電圧をRV1で うになっています。LCC-CBの補正波形は、LCC-LB, LCC-幅は RV2 で可変でき, これも水平地磁気の強さに応じて調 **変えることによって水平地磁気の強さに応じて調整するよ** 整するようになっています。 います。

I)	A1 A0 / 2	0 0 LTO	0 1 RB0	1 0 LT1	1 1 RB1	0 0 LTZ	0   1   RB2	
アドレス	A2			0		-	-	•••
	A4 A3		_	0				
# #		<b>÷</b>	7	甲什什	*	平台	*	•••

### 周囲温度補正信号

がは下図に示す方向に変位します。この変位量が周囲温度 モニターの周囲の温度が高くなるにつれビームランディン した補正信号を作り, 4つのコーナー部の LCC ドライブに 出力しています。温度センサーはD7のダイオードで,この 変化に対し直線的であるとして近似し, 周囲温度変化に比例 温度特性を利用して温度検川を行っています。また標準周 **阴温度を25℃と設定し,RV6を調整してこの時のTP12の** II力がOVになるようにしています。



周囲温度が上がった時の ランディング変化の向き

### SECTION 3

## CIRCUIT DESCRIPTIONS

## 3-1. BA3 BOARD (BVM-2811 ONLY)

### 3-1-1. Input Circuit

This circuit is composed of transistors Q101 to Q105 and performs common mode rejection. In Fig. 3-1-1, gains of amplifier for input A and B are described as follows.

$$A = \frac{Rc}{Ri}$$
,  $B = \frac{Rc}{Ri}$ 

When input (ec+ei) is applied to A and input (ec-ei) to B, then output eo is

$$eo = \frac{Rc}{Ri} (ec + ei) + (-\frac{Rc}{Ri})(ec - ei) = 2\frac{Rc}{Ri} ei$$

This equation indicates that ec is eliminated and there is no common mode signal in output signal. With hook up circuit, NF (Negative Feedback) amplifier is used to improve characteristic, however there is no common mode signal in output signal. Other systems are also the same.

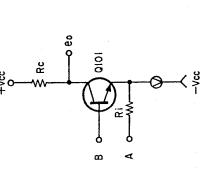


Fig. 3-1-1

Input select SW, sync select SW Video A/B or G/Y (component) signal is selected by Input select SW ICI while INT/EXT in Sync signal is selected by sync select SW IC3 and IC4.

### 3-1-2. Sync AGC Circuit

### Sync AGC

This circuit is composed of LPF (Q701), variable amplifier maximum value of eo with E1 (base voltage of Q708) and controls bias of amplifier so that they match. Also the gain control circuit compares pedestal voltage of eo with E2 (base voltage of Q711), and controls the gain of variable amplifier so (Q702 to Q705), AMP (Q706 and Q707), bias control circuit (Q708 to Q710) and gain control circuit (Q711 and Q712). The reversed composite video (sync) signal is output to eo (Q707 collector) in Fig. 3-1-2. The bias control circuit compares

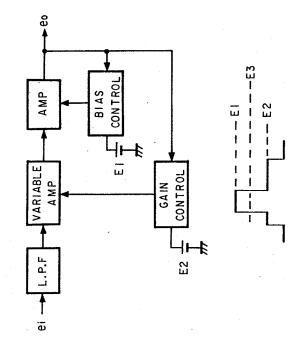


Fig. 3-1-2.

### Composite sync separation and vertical sync separation

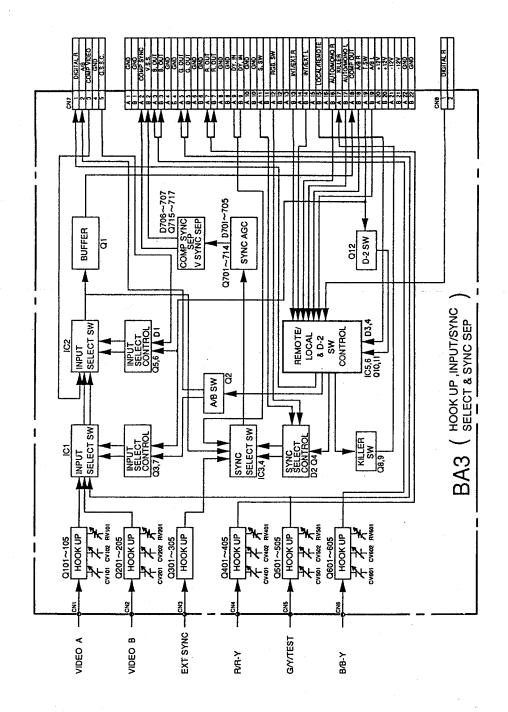
Q713) by Q713 to Q715. Horizontal component in this signal is eliminated through LPF (Q716) and vertical sync is separated at Composite sync is separated by comparing E3 (base voltage of Q717.

## 3-1-3. Operation Mode Switching Circuit

## REMOTE/LOCAL and D2 SW control

The signal for input select SW and sync select control generated according to the control mode (REMOTE/LOCAL).

## **BA3 BOARD BLOCK DIAGRAM**



3-2(E)

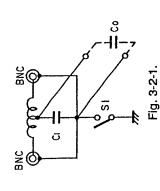
## QA, QB, BA (BVM-3011P ONLY) BOARDS 3-2.

### 3-2-1. Input Circuit

## Cable Compensation (QA, QB)

CABLE COMPENSATION is composed of inductance L and capacitor C1 (Fig. 3-2-1) in QA board and performs return loss Grounding or floating in input terminal can be selected by switch compensation.

On floating mode, common mode rejection can be performed QB board also has same function.



Hook Up Circuit (BA)

This circuit is composed of transistors Q101-Q105 and performs common mode rejection when SW S1 is selected to the floating mode.

In Fig. 3-2-1, Gains of amplifier for input A and B are derived a follows.

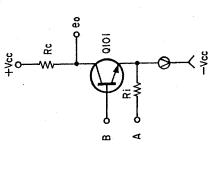
$$A = \frac{Rc}{Ri}$$
: Gain of amplifier for input A

B=-
$$\frac{Rc}{Ri}$$
: Gain of amplifier for input B

input (ec-ei) to input B, then output eo is When input (ec+ei) is applied to input A and

$$eo = \frac{Rc}{Ri} (ec+ei)+(-\frac{Rc}{Ri})(ec-ei)=2\frac{Rc}{Ri}$$
 ei  
This equation indicates that ec is eliminated and there is no common mode signal in output signal.

On hook up circuit, NF Amplifier (Negative Feedback) is used common mode signal in output signal. get frequency response flat.



Input select SW, sync select SW (BA) Fig. 3-2-2

For composite video signal, VIDEO A/B/TEST mode is selected by INPUT SELECT SW (IC1). For sync signal, INT SYNC/EXT SYNC is selected by SYNC SELECT SW IC2.

## 3-2-2. Sync AGC Circuit

Pass Filter) (Q701), variable gain amplifier (Q702-Q705), bias control circuit (Q708-Q710), gain control circuit (Q711, 712)and amplifier (Q706, 707), Fig. 3-2-3 shows block diagram of this This circuit is composed of following components; LPF (Low circuit.

An inverted composite video signal or composite sync signal (eo) is derived at the collector of transistor Q707

base voltage of Q708 (E1) and controls bias of amplifier so that The bias control circuit compares maximum value of eo with

base voltage of Q711 (E2), and controls variable gain amplifier Also the gain control circuit compares pedestal level of eo with so that they match.

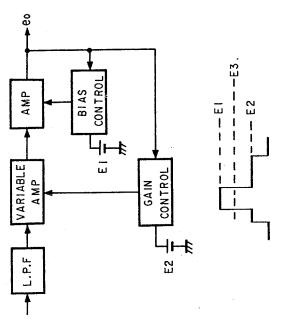


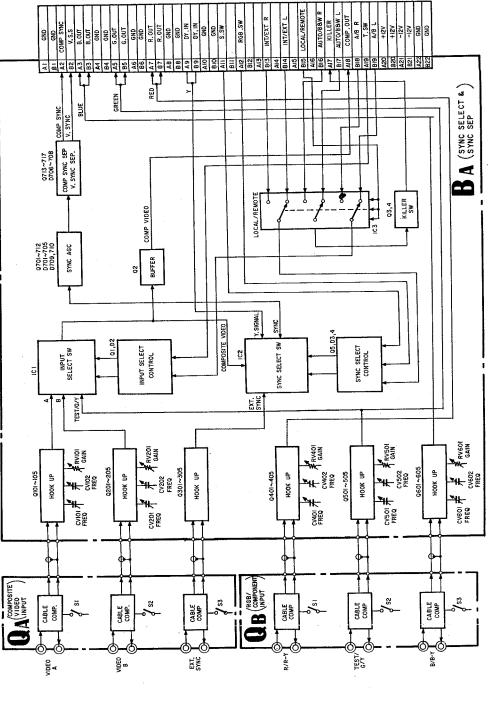
Fig. 3-2-3.

# Composite Sync Separation, Vertical Sync Separation

Composite sync is separated from composite video signal or composite sync by comparing voltage eo with the base voltage of

Horizontal component in composite video signal or composite sync signal is removed by LPF (Low Pass Filter, Q716) and Vertical sync is separated by transistor Q717.

# BLOCK DIAGRAM OF QA, QB, BA BOARDS



(BVM-3011P ONLY)

3-4(E)

### 3-3. BG BOARD

## 3-3-1. Luminance Signal Circuit

ICI works as a selector switch of composite video signal or luminance signal derived from Y/C separation circuit. This IC activates by either FILTER-SW in right side drawer or killer signal.

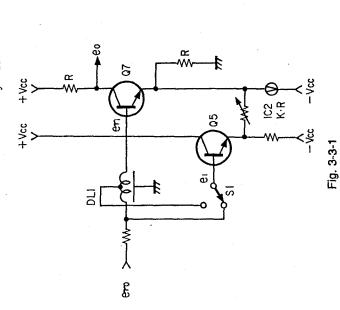
### Aperture Contorol

Resistance value between Pin ① and ③ is controlled by the potential between pin ③ and pin ④, also pin ① and pin ⑥. Aperture control circuit is composed of DLI (delay line), transistors Q5, 7, 8 and IC2. IC2 operates as a variable resistor.

Input signal: e 70

Delayed signal by delay line: e t 1 Second delayed signal: e 72

et (at base of transistor Q5) is obtained as below due to the combination of direct wave and reflected wave by DL1. See Fig. 3-3-1



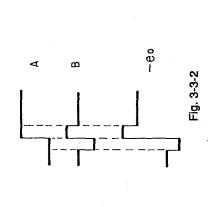
 $e1 = (e \tau 0 + e \tau 2)/2$ 

Therefore eo is

e0=-(e
$$\tau$$
1+  $\frac{1}{K}$  (e $\tau$ 1-  $\frac{1}{2}$  (e $\tau$ 0+e $\tau$ 2)))  
1st term 2nd term

In the above equation, 1st term shows waveform A in Fig. 3-3-2 and 2nd term shows waveform B. When K is variable, amount of preshoot and overshoot can be varied. K: variable constant

Switch S1 is used for selection of boost frequency.



Y Delay, Y Buffer Amplifier Y/C delay time can be matched by delay line DL2 and Y signal is amplified and fed to the next stage.

## 3-3-2. Color Gain Control Circuit

In this section (R-Y) signal processing is described as below, but (B-Y) signal is processed by the same way as (R-Y) signal.

## R-Y Amplifier and Clamping

The R-Y color difference signal from the decoder board is amplified at the amplifier composed of transistors Q21 and Q22 and clamped at the Horizontal Sync by transistors Q23 and IC3.

## R-Y Gain Control Amplifier

This is a variable gain control amplifier composed of variable resistor element of IC4 and transistors Q25-Q27. Gain of this amplifier can be controlled by the color gain control voltage at the Pin @ of IC4.

### **AGC Pulse Generator**

Generates the reference pulse for AGC (Automatic Gain Control) of color gain control circuit.

## Gain Control Amplifier for AGC Pulse

Circuit is the same as R-Y GAIN CONTROL AMPLIFIER. Gain of this amplifier is controlled by the voltage at pin (8) of IC4.

### Color Gain Control

AGC pulse, is clamped by IC6 (2/3) and is made sampling by IC6 (3/3). Amplitude of AGC pulse and DC voltage supplied AGC pulse, which is output signal of Gain control amplifier for from CHORMA control on the front panel are compared and matched by IC7 (1/2) with controlling the above gain control ampliier.

This control voltage is supplied to the control terminals of R-Y and B-Y gain control amplifiers and controls color gain.

## 3-3-3. G-Y MATRIX amplifier

G-Y signal is obtained by matrixing R-Y signal and B-Y signal with the amplifier composed of transistors Q44 and Q45.

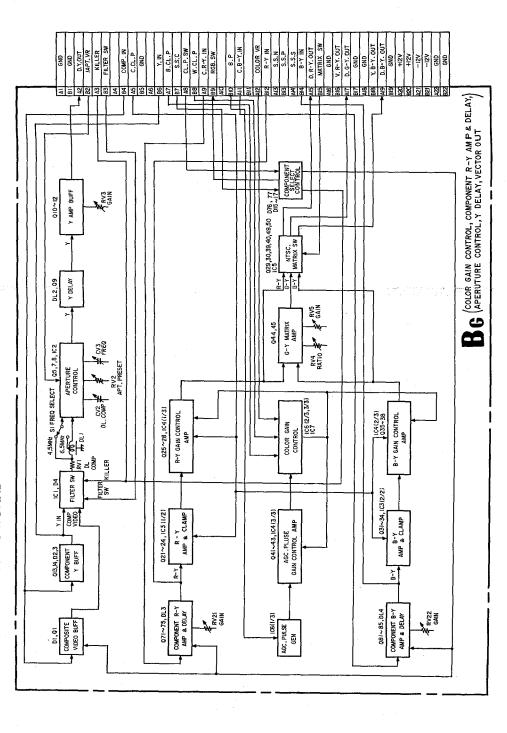
## 3-3-4. NTSC MATRIX SW

NTSC MATRIX mode operation is obtained by the matrix circuit Q39, Q40, Q49, Q50 and IC5. CP14-CP19 perform matrixing composed of resistor networks CP14-CP19, transistor Q29, Q30, and IC5 works as a switch.

# 3-3-5. COMPONENT R-Y Amplifier and Delay Circuit

R-Y signal of COMPONENT signal is compensated with amplitude, porality and delay time to match the R-Y signal of decoder output.

## BLOCK DIAGRAM OF BG BOARD



# 3-4-1. Switching Circuit Between Y (Luminance) Signal, Color Difference Signal and RGB Signal, AGC Pulse Insertion, Y-C Matrix

## Switching Circuit of Y Signal, Crosshatch Signal and SET UF Signal, Buffer

Y Signal, crosshatch signal and SET UP signal are selected by the switcher (IC1 (1/3) (2/3)) and selsected signal is output vibuffer O1.

## Switching Circuit or R-Y Signal, Red Signal and SET UP Signa (Same as B-Y, G-Y Signal)

R-Y signal, Red signal, SET UP signal are selected by IC2 (1/32) and selected signal is output via buffer Q4.

# Y Signal Screening (Same as R-Y, B-Y, and G-Y Signals)

The signal is performed SAMPLE and HOLD (S/H) at the bac porch of signal by transistor Q2 and ICS (2/2). Y screening i performed by replacing S/H output signal, by the original signal. For color difference signals screening is made at the Horizonta Sync portion.

# Red Matrix, Blue Only SW, Buffer (Same as Green and Blue)

Red is obtained by Y-C matrix circuit composed of resistonetwork CP9 from color difference signals.

AGC pulse from pulse generator is inserted into Red signal fo contrast control.

IC7 activates by the Blue only SW on the front panel. Blue only SW is used for the display of blue signal as a monochrom picture.

# 3-4-2. Contrast Control, Brightness Control, Peak Limiter

## Red Contrast, and Brightness Control Amplifier (Same at Green and Blue)

This is a variable gain control amplifier composed of variable resistor element IC101 and transistor Q102 and Q103. By controlling the voltage at pin (4) of IC101, contrast control performed, and brightness control is done by controlling the bia voltage of transistor Q102.

## Red Limiter (Same as Green and Blue)

When excess input signal comes in, amplitude is limitted by the limitter composed of transistors Q104 and Q105.

### Red Contrast Control

AGC pulse inserted in Red signal is clamped by transistor Q10' and sampled by transistor Q108.

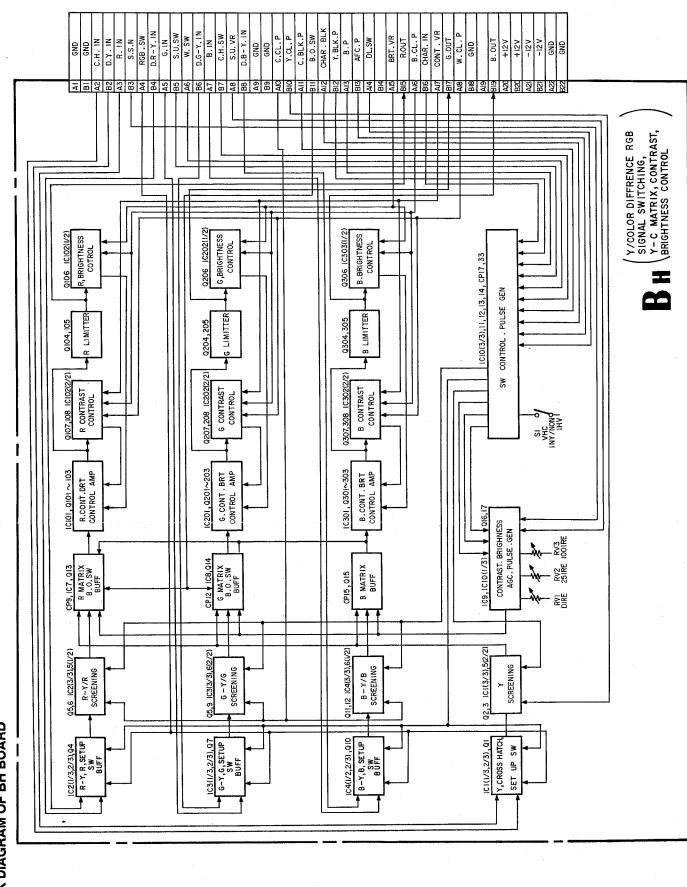
Amplitude of above AGC pulse is compared with the reference voltage applied from CONTRAST control on the front panel in IC102 (2/2).

Contrast control is performed by controlling the gain of Red contrast brightness control amplifier so that these voltages may

# Red Brightness Control (Same as Green and Blue)

The black level of Red signal is performed SAMPLE and HOLD (S/H) by transistor Q106. This S/H voltage is compared with the reference voltage applied from Brightness control on the front panel in IC102 (1/2). Brightness control is performed by controlling the bias of Red contrast Brightness control amplifier so that these voltages may match.

## **BLOCK DIAGRAM OF BH BOARD**



## 3-5. BV1 BOARD (BVM-2811 ONLY)

### S/P Converter

D-1 serial signal (270 MHz) input is converted into parallel signal through IC101 (IC201) and output at ECL level.

### Cable driver

The signal performed cable loss compensation through IC101 (IC201) is output as the active throughout via the amplifier circuit composed of Q101 to 103 (Q201 to 203).

### ECL/TTL Conversion

The Channel signal (ECL level) selected by the setting of input channel is input to ECL/TTL converter (IC8, 9 and 10) to convert into TTL level.

### D-1 Decoder

Parallel D-1 signal input is converted into Y/R-Y/B-Y digital signals through IC11 (D-1 decoder) to output.

## Composite sync generator

Timing pulse for sync signal is generated with H (horizontal period) and F (field period) signals output from D-1 decoder (IC11) as a reference.

## 3-6. BV2 BOARD (BVM-2811 ONLY)

## 3-6-1. Buffer, and Buffer and Delay Circuit

Digital Y/R-Y/B-Y signals input are latched, Y signal is delayed through the delay circuit in order to meet timing as against R-Y/B-Y signals.

### D/A Converter

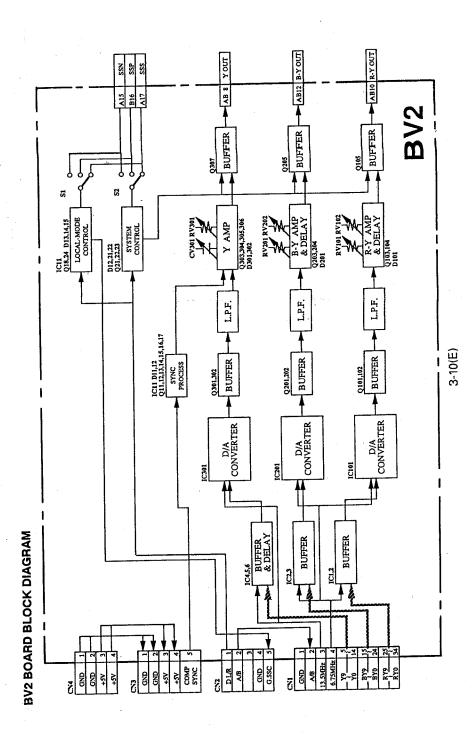
Digital Y/R-Y/B-Y signals are converted into analog signals by DAC (IC101, 201 and 301), and bandwidth is restricted by L.P.F.

## 3-6-2. Y Amplifier, and R-Y/B-Y Amplifiers and Delay Circuit

The gain of Y/R-Y/B-Y signals converted into analog signals and the delay time is adjusted. Further, sync signal is added to Y signal so as to generate composite Y signal.

BV1 ICI7 INVERTER D-1 DECODER CXD8069G ICI6 PHASE
COMPARATOR vco or A/B CONTROL BUFFER ICI02 INPUT DETECTION ECL + TTL CONVERTER IC202 INPUT DETECTION S/P CONVERTER S/P CONVERTER W. 2 W-84 191 A/B SWITCH IC101 BV1 BOARD BLOCK DIAGRAM CABLE DRIVER Q101,102,103 D-I SERIAL
SIGNAL CA301
INPUT CA302
ACTIVE CA302
THROUGH D-I SERIAL
SIGNAL CNI01
INPUT CNI02
ACTIVE CNI02
THROUGH OUT

GND GND +5V +5V SYNC



## 3-7-1. Red Screen SW, AGC Pulse Insertion (Same as Green and Blue)

Red signal can be cut off by RED SCREEN SW on the front panel. Horizontal rate AGC pulse is removed and the reference pulse is inserted in the signal for the GAIN and BIAS adjustment of video output amplifier and for the beam control circuit.

# 3-7-2. Red Limitter, Gain Bias Control Amplifier

This limitter is used for limiting the excess input level of the signal below 0V DC.

The GAIN/BIAS CONTROL amplifier is composed of variable resistor element and transistors as same as contrast control amplifier (See section of BH board)

# 3-7-3. Red Feedback Amplifier, Red Gain Control Red Bias Control Circuit

RED FEEDBACK amplifier inverts the phase of the signal derived from VIDEO OUTPUT amplifier via NF BUFF (Negative Feedback Buffer) in BK board.

The BIAS of VIDEO OUTPUT AMPLIFIER controlled by RED BIAS CONTROL circuit so that the black level of inverted signal

may be 0V DC. (This time, black level of VIDEO OUTPUT will be -90V DC.) RED GAIN CONTROL circuit controls the gain of VIDEO OUTPUT AMPLIFIER so that the level of the reference pulse

DUITOL AMPLIFIER SO that the level of the reference purson may match to the voltage at pin (a) of IC103.

(When GAIN control (RED) in the drawer is turned, the level of the reference pulse inserted in section 1 changes. And amplitude (Gain) of Red signal changes so that the amplitude of the reference pulse derived from RED FEEDBACK amplifier may be maintained constant by GAIN CONTROL circuit.)

# 3-7-4. Red Cathode Current Detection, Red G1 Control Circuit (I-V Conversion)

Refer to the BK board section of beam control circuit

# 3-7-5. ABL Detector, Drive Control, Over Drive

The reference level of GAIN CONTROL circuit is controlled by ABL detector and DRIVE CONTROL so that the cathode current of CRT exceeds the predetermined (Preset) value to prevent damage of CRT. OVER DRIVE circuit lights up the OVER LOAD LED on the front panel for warming.

## 3-7-6. G2 Control Circuit

Circuit diagram of G2 control circuit is shown in Fig. 3-7-1. The signal for G1 BIAS control is fed to base of the transiste

The signal for G1 BIAS control is fed to base of the transisto Q11 from RED G1 BIAS control circuit. (Same as G and B) Only one of the highest voltages among the base voltages o transistors Q11 to Q13 is turned on and is compared with the reference voltage of base voltage Q14.

And this circuit drives transistor Q105 located in PA board so that Transistor Q105 in PA board drives G2 voltage for adjusting cut off level of CRT.

Base voltage of transistor Q14 (refernce voltage) is set so that the voltage of Black level at G1 electrode may be -120V DC and

maintain EKco (cut off voltage) -120V constant.

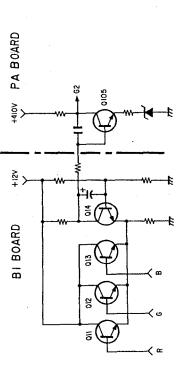
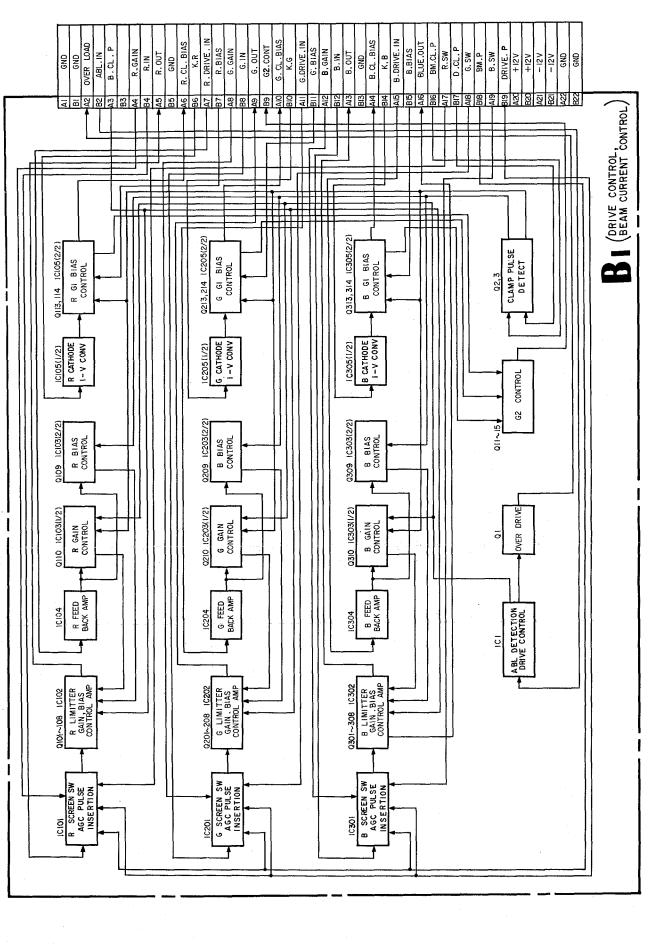


Fig. 3-7-1.

## BLOCK DIAGRAM OF BI BOARD



3-11(E)

## SYNC PROCESSOR, PULSE GENERATOR (BJ BOARD) . မွ

## 3-8-1. 1H Pulse Processing

board. And 1H sync is made by separating V sync and equalizing The composite sync is separated from incoming signal at pulse from composite sync.

Also H sync which has constant pulse width is made from 1H

## 3-8-2. 2fH Multivibrator

This circuit generates 2fH rate pulse from H rate flyback pulse.

### 3-8-3. Vertical Counter

The 2fH rate pulse is counted down to generate Vertical rate When there is no incoming signal, trigger pulse is generated by trigger pulse for vertical deflection circuit.

When there is incoming signal with V sync, this counter circuit is reset by V sync and generates trigger pulse synchronized with Vvertical counter (384H).

Also in order to increase stability of vertical scanning, noise gating process is made during V sync period.

## 3-8-4. V Sync and Delay

V sync and V BLANKING pulses are generated by output trigger

And when V DELAY SW on the front panel is selected ON, these pulses are generated in a V/2 delayed position relative to the V sync position of incoming signal. pulse from vertical counter.

## Crosshatch Generator

Internal crosshatch signal is made as follows.

The vertical lines are generated by approx. 18fH rate pulses And flyback pulse is counted down to generate horizontal lines. synchronized with flyback pulse.

# Burst Gate Pulse, Y-CLAMP Pulse, C-CLAMP

The Burst Gate Pulse (B.G.P.), clamp pulse for luminance signal **Puise Generator** 

(Y.CL.P) and clamp pulse for color difference signal (C.CL.P) are generated from 1H sync via LCR network and transistors.

## Picture Set Up Pulse Generator

This is the gate pulse generator for picture set-up function, and consists of mono multipliers.

# Split, Y Blanking, C Blanking Pulse Generator

BLK P) are generated. These pulses are used for the purpose of DC restoration of color difference signal, Y signal and RGB signal. DC restoration is made by inserting the black reference signal during blanking period in the signal. Also C.BLK. pulse is mixed with vertical rate blanking signals for SPLIT display and Y BLANKING pulse (Y BLK P) and C BLANKING pulse (C for B/W display.

### and Clamp Pulse Rate AGC Horizontal Generator 3-8-9.

control are stabilized by insertion of reference signal and using feedback circuit. Horizontal rate BLACK pulse (B.P.), BLACK CLAMP pulse (B.CL.P) and WHITE CLAMP pulse (W.CLP) COLOR GAIN control, CONTRAST control and BRIGHTNESS are generated here.

## In this model, BEAM CONTROL circuit is used for high 3-8-10. Vertical Rate AGC and Clamp Pulse Generator

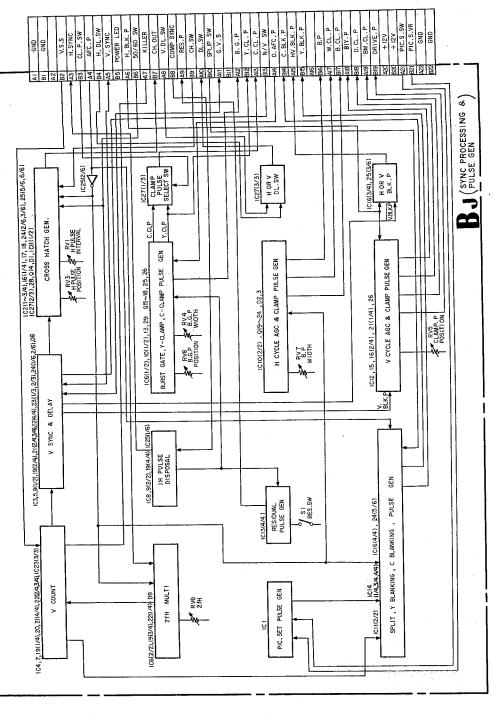
The reference signal is inserted in the signal for gain control stability in white balance.

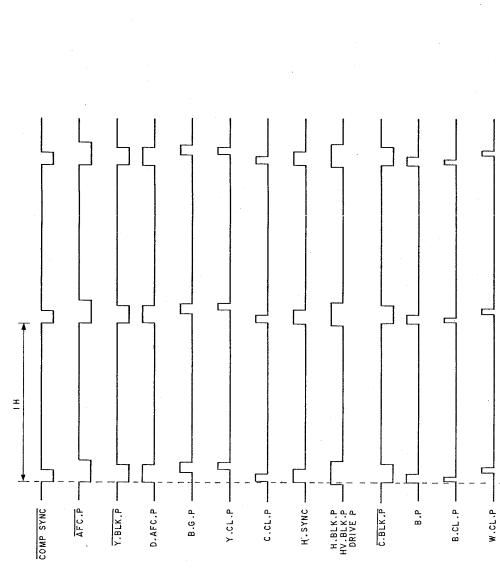
Vertical rate BEAM PULSE (BM.P) DRIVE PULSE (DRIVE.P) circuit in video output amplifier and for beam control circuit. and BEAM CLAMP PULSE (BM.CL.P) are generated here. Vertical rate pulses are used for this purpose.

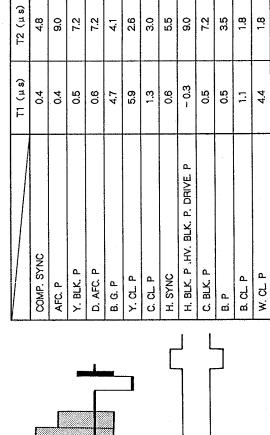
### Others

and RGB signal. Accordingly C.CL.P is used as clamp pulse for CLAMP PULSE SELECTION SW switches C.CL.P or Y.CL.P Black reference is determined at the position of clampling in black reference insertion circuit for both color difference signal color difference signal processing and Y.CL.P is for RGB signal. to the clamp pulse for the insertion of black reference.

## BLOCK DIAGRAM OF BJ BOARD







SYNC

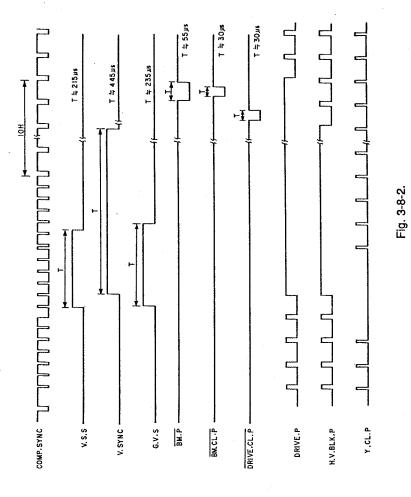
PULSE

PULSE

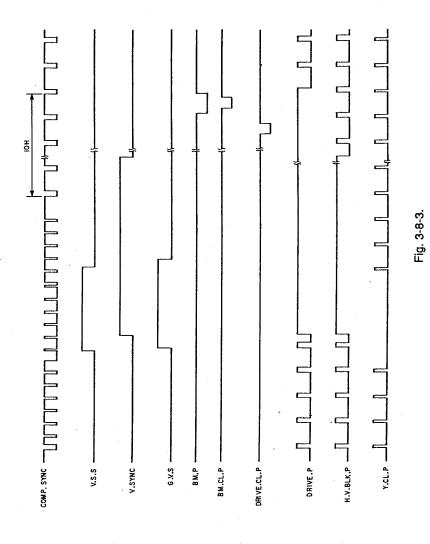
COMP VIDEO

Fig. 3-8-1.

## FIELD 1 VERTICAL BLANKING



## FIELD 2 VERTICAL BLANKING



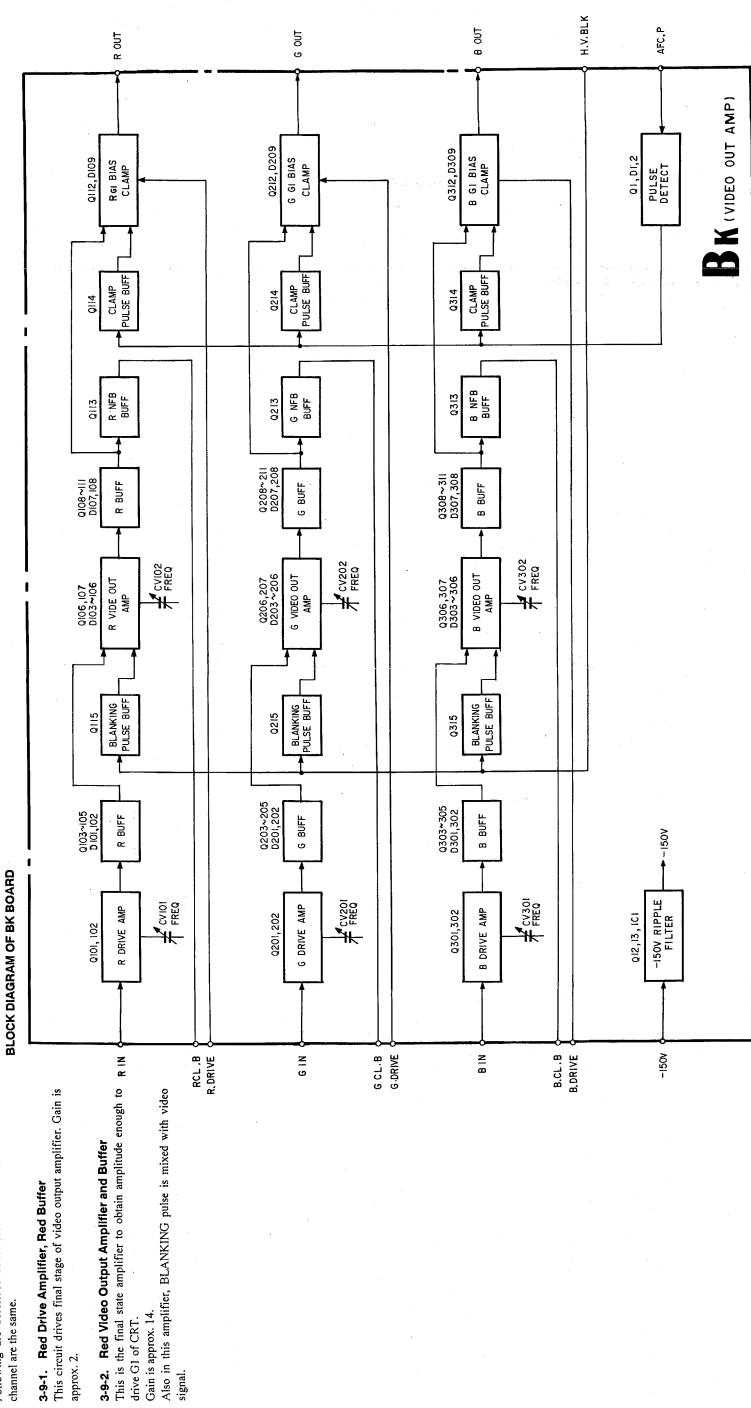
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3-16(E)

### 3-9. BK BOARD

Following are described about Red channel. Green and Blue channel are the same.

**3-9-1. Red Drive Amplifier, Red Buffer** This circuit drives final stage of video output amplifier. Gain is approx. 2.



# 3-10. BEAM CONTROL CIRCUIT (BI, BOARDS) (Same as Green and Blue)

Block diagram is shown in Fig. 3-10-1.

# 3-10-1. Detection of Cathode Current and I-V Conversion (BI BOARD) Cathode current is detected as a voltage by using IC105 (1/2).

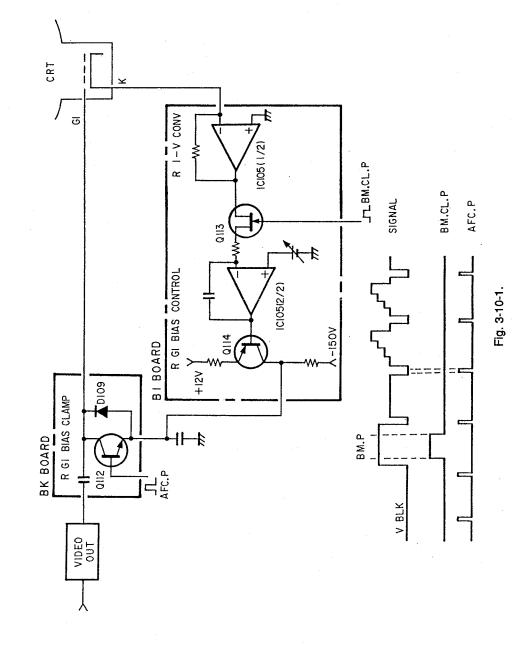
3-10-2. Red G1 Blas Control (BI BOARD)

BMP is inserted in the signal during vertical blanking in BI

This BMP is detected as a cathode current and sampled by BM CLP applied to FET Q113.

This bias control circuit controls the base voltage of transistor Q114 so that converted voltage from cathode current and the reference voltage may match.

**3-10-3.** Red G1 Bias Clamp Circuit (BK BOARD) Video output signal is clamped at the voltage of collector of transistor Q114 in BI board by using transistor Q112.



### 3-11. NTSC COMB FILTER (BT BOARD) (BVM-2811 ONLY)

# 3-11-1. 3 Line Dynamic Comb Filter (Fig. 3-11-1.)

signal is hereinafter referred to as the OH signal.) The OH signal becomes the signal which is 1H (63.556 µsec) delayed by the 1H delay circuit (1H delayed signal) and the signal which is 1H The fed video signal is band limited by a low-pass filter. (This

band-pass filters (center frequency: fs) for delay of  $\lambda/2(140 \text{ nsec})$ . The 1H signal is further  $\lambda/2$  delayed. The 0H+ $\lambda/2$ , 1H, 1H+ $\lambda/2$ , 1H+ $\lambda/2$ , 1H+ $\lambda/2$  ( $\mathbb{A}$ ,  $\mathbb{B}$ ,  $\mathbb{O}$ ,  $\mathbb{O}$  and  $\mathbb{E}$  of the block diagram) further delayed by the 1H delay circuit (2H delayed signal). The 0H, 1H, and 2H signals are band limited by the respective at each point are separated into chroma signals only by the correlation circuit (IC501).

The luminance signal is separated with the chroma signal subtracted from the 1H signal.

## 3-11-2. 2 Line Simple Comb Filter

signal subtracted, and the luminance signal is separated by The chroma signal is separated with the  $0H+\lambda/2$  and  $1H+\lambda/2$ subtracting the chroma signal from the 0H signal.

## 3-11-3. 1H Delay Circuit (Fig. 3-11-2.)

The 1H delay circuit consists of two CCD delay lines. These CCD delay lines are used in parallel to attain 1H

(63.556 µsec) signal delay.

## 3-11-4. Band-pass Filter (Fig. 3-11-3.)

The band-pass filter consists of a delay line. It performs band limiting with the group delay kept constant.

# 3-11-5. Correlation Circuit (IC501) (Fig. 3-11-4.)

The correlation circuit consists of a limiter circuit which is common to emitters to perform separation of a chroma signal.

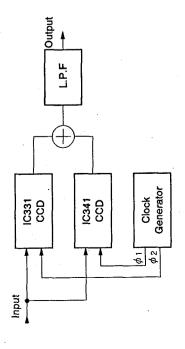


Fig. 3-11-2.

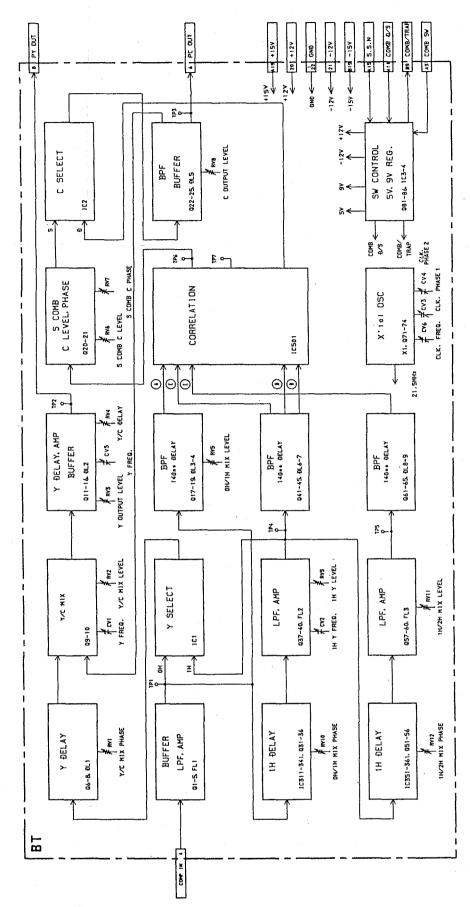


Fig. 3-11-1.

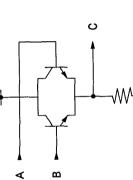


Fig. 3-11-3.

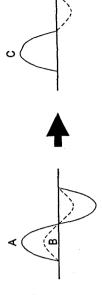


Fig. 3-11-4.

# (BVM-3011P ONLY) 3-12. PAL DEMODULATOR, Y TRAP CIRCUIT (BD BOARD)

The composite video signal (PAL) supplied from BA board is fed to transistor Q1 (buffer), then is supplied to the 4.43 MHz trap circuit with Y signal and to band pass filter with chrominance

## 3-12-1. Chroma Band Pass Filter

transistor Q1 is fed to the Band pass filter composed or resiste The composite video signal obtained from at the emitter R12, capacitor C7, C8 inductor L3 and transistor Q5.

frequency (4.43 MHz) by L3, and chrominance signal is derived The center frequency of this filter is adjusted to the subcarrier from Q5

## 3-12-2. Residual SW Circuit

The chrominance signal derived at transistor Q5 is fed to analo switcher IC2.

which has almost same phase as H sync is fed to control terminal of analog switcher (pin (3) of IC2) and screening is performed When switch S1 on BJ board is set to ON position, residual pulse during H sync period.

When switch S1 on BJ board is set to OFF position. Low level When there is residual subcarrier in the video signal, clamp leve of color difference signal changes by turning switch S1 ON/OF and therefore residual subcarrier can be checked on the picture a signal (0V DC) is fed to control terminal and screening action not performed. Thus residual switch circuit does not activate.

## 3-12-3. Chroma Amplifier Circuit

a color shift.

The chrominance signal from residual switch circuit (IC2 pin ④ is fed to chroma amplifier circuit (Q19, Q36).

(gain: 1X), it is voltage divided by resistors R400 and R314 an After the chroma signal is amplified by the inversion amplifie then input to the R-Y input terminal (IC1, pin (3)) and B-Y inpu terminal (IC1, pin (2)) of the following demodulator circuit vi the buffer (Q38).

## 3-12-4. Phase Control Circuit

The chrominance signal from residual switch is also fed to phas control circuit (Q6, Q7, Q8, Q9, D12).

In this circuit, a variable capacitance diode (D10) is used t control the phase of color burst signal.

Anode voltage of D10 is ampplied by variable resistor RV8 an preset adjustment of phase is made by this variable resistor.

When the PHASE control on the right side of the front panel i turned, DC level of phase control signal (board terminal A13 changes and this phase control signal is fed to the cathode of D1 chrominance signal is controlled according to the DC level of th via analog switcher (IC5). In this way, Burst phase phase control signal.

side drawer, between pins (a) and (b) of IC5 becomes conductive and phase control becomes dependent on RV7, disabling the When PAL-D is selected with the PAL switch inside the rigl Phase Control of the right side front panel.

Analog switcher IC5 (1/3) activates to make short-circuit between input terminal pin (3) or (5) and output terminal pin (4), only when COLOR STANDARD SELECTOR in the right side of drawer is selected to PAL and otherwise pin ⑤ kept open As above phase controlled chrominance signal is derived from collector of transistor Q9 and burst signal in this signal is gated IC6. The gated burst signal is fed to the burst input terminal pin (1) of demodulator IC1 ĝ,

## PAL Demodulator

Block diagram of IC used for PAL demodulator is shown in Fig. 3-12-1. This IC is designed for use of NTSC demodulator.

When chrominance signal is fed to pin (2) and pin (3), color burst B-Y color difference signals are obtained at output terminals pin signal to pin (1) and Burst Gate Pulse (B.G.P.) to pin (1), R-Y and @ and pin @

axis and axis. Variable capacitor CV1 is adjusted so that the phase The demodulation axes of this demodulator are R-Y angles between them are 90°

Local oscillator (4.43 MHz) is formed by CW oscillator in IC1 The variable capacitor CV2 is adjusted so that the free run connected to the terminal pin (5), (6), (7), (8) and external circuit. frequency may be subcarrier frequency 4.433619 MHz.

Also APC (Automatic Phase Control) circuit is formed by APC section in ICI connected to the terminal pin ® and ® local oscillator is controlled by APC circuit. The color difference signals demodulated by this IC are fed to pass filter, where high frequency component is removed, then R-Y and B-Y color difference signals are obtained

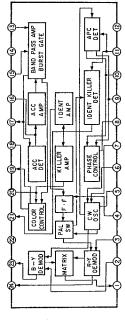


Fig. 3-12-1.

# PAL-D Matrix and PAL S/D Switching Circuit

signals, but the operation of both circuits is the same. So only the This circuit is further divided into circuits for the R-Y and B-Y R-Y one will be explained R-Y signals input from the demodulator circuit are input to Q20 (BUFF) and Q21 (BUFF).

The signals input to Q21 are then input to pin ② of the analog switcher (IC5). When PAL S has been selected, between pins ② and 

Becomes conductive and the signals are supplied to the The signals input to Q21 are then input to pin following circuit via Q33 (BUFF)

The signals input to Q20 are formed by IC7 and Q18.

Bias is controlled by a clamp circuit and is input to pin (5) of the 1H delay line (IC3). The DC level of the input is adjusted to the

IC3, driven by the 10.64 MHz clock signal generated by the clock generator circuit configured with XZ, Q34 and Q35, delays optimum value by using RV9.

The high frequency component of the signal thus output is after which the signal is input to the following PAL-D matrix removed by the low-pass filter configured with Q22 and Q23, the input signal by 1H cycle and outputs it from pin (1) circuit. The PAL-D matrix circuit is configured with R100, R101 and Q24. The signal that was not delayed is input through R100 while

emitter. The signal obtained from the Q24 emitter is input to pin The PAL-D signal added to the base of Q24 is obtained from its becomes conductive and the signal is supplied to the following ① of IC5. When PAL-D is selected, between pins ① and the 1H delayed signal is input through R101 at a ratio of 1/2. circuit via Q33 (BUFF).

### 4.43 MHz Trap Circuit, Phase Compensation, Y **Delay Correction Circuit** 3-12-7.

The composite video signal from the emitter of transistor Q1 fed to 4.43 MHz trap circuit composed of resistor R5, capacitor C1, C2 and inductor L1

Adjustment of L1 is made so that the resonance frequency of this trap circuit should be subcarrier frequency.

Y (Luminance) signal removed subcarrier is obtained at output circuit. (Transistor Q2, resistor R8, R9, R10, inductor L2 terminal of the trap circuit and is fed to the phase compensation capacitor C4)

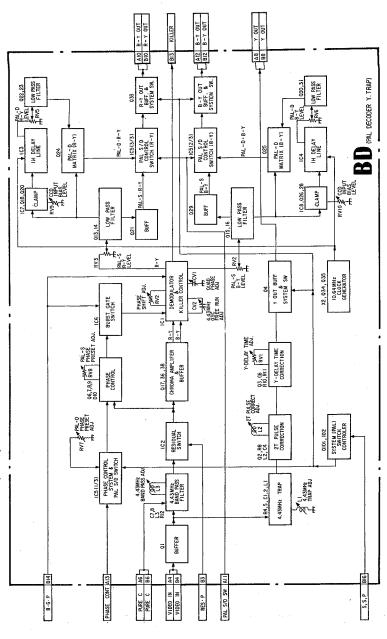
This circuit compensates phase delay of the signal at high frequency due to the trap circuit.

Y signal compensated phase delay is fed to Y-delay circuit. In this circuit Luminance/Chrominance time error is compensated by delay line

### **Color Standard Selector** 3-12-8.

When PAL system is not selected by the COLOR STANDARD SELECTOR in the right side drawer, transistor Q101, Q102 are cut off and ± 12V line power source is not supplied to the demodulator circuit

# BLOCK DIAGRAM OF BD (PAL) BOARD



## (BVM-2811 ONLY) 3-13. NTSC DEMODULATOR, Y TRAP CIRCUIT (BC BOARD)

The composite video signal (NTSC) supplied from BA board is fed to transistor Q1 (buffer), then is supplied to the 3.58 MHz trap circuit with Y signal and to band pass filter with chrominance signal.

## 3-13-1. Chroma Band Pass Filter

ь transistor Q1 is fed to the Band pass filter composed or resistor The composite video signal obtained from at the emitter R18, capacitor C7, C8 inductor L3 and transistor Q5.

The center frequency of this filter is adjusted to the subcarrier frequency (3.58 MHz) by L3, and chrominance signal is derived from Q5.

-12V and Q15 is cut off and then chrominance signal (Pure C) is Q103 and Q104 activates and base voltage of Q5 goes down to This circuit selects comb filter (BB board) mode or notch filter mode by a push of button on the front panel. When comb filter mode is selected, comb switch circuit composed of transistor provided from comb filter circuit to IC2.

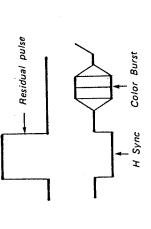
## 3-13-2. Residual SW Circuit

The chrominance signal derived at transistor Q5 is fed to analog switcher IC2 (Pin (1))

When switch S1 on BJ board is set to ON position, residual pulse which has almost same phase as H sync is fed to control terminal of analog switcher (pin (3) of IC2) and screening is performed during H sync period.

signal (0V DC) is fed to control terminal and screening action is When switch S1 on BJ board is set to OFF position. Low level not performed. Thus residual switch circuit does not activate.

When there is residual subcarrier in the video signal, clamp level and therefore residual subcarrier can be checked on the picture as of color difference signal changes by turning switch S1 ON/OFF a color shift.



**Chroma Amplifier Circuit** Fig. 3-13-1. 3-13-3.

pin (4) is divided by resistor R85 and R86 and is fed to chroma The level of chrominance signal from residual switch circuit (IC2 amplifier circuit (Q6, Q7, Q8).

Non-inverted signal is fed to R-Y input terminal (ICI pin (3)) of The gain of this amplifier is amost 1 and this amplifier has 2 demodulator and inverted signal to B-Y input terminal (IC1 pin outputs. They are non-inverted signal and inverted signal.

The chrominance signal from residual switch is also fed to phase control circuit (Q9, Q10, Q11, Q12, D2).

Anode voltage of D2 is applied by variable resistor RV2 and In this circuit, a variable capacitance diode (D2) is used control the phase of color burst signal.

When the PHASE control on the right side of the front panel is turned, DC level of phase control signal (board terminal A13) changes and this phase control signal is fed to the cathode of D2 via analog switcher (IC2). In this way, Burst phase of chrominance signal is controlled according to the DC level of the preset adjustment of phase is made by this variable resistor. phase control signal.

Analog switcher IC3 (2/3) activates to make short-circuit when COLOR STANDARD SELECTOR in the right side of between input terminal pin and output terminal pin 4, only drawer is selected to NTSC and otherwise pin (3) kept open circuit.

As above phase controlled chrominance signal is derived from emitter of transistor Q12 and burst signal in this signal is gated by IC3 (1/3). The gated burst signal is fed to the burst input crminal pin (1) of demodulator IC1.

### NTSC Demodulator 3-13-5.

Block diagram of IC1 used for NTSC demodulator is shown in When chrominance signal is fed to pin (1), (2) and pin (3), color R-Y and B-Y color difference signals are obtained at output burst signal to pin (1) and Burst Gate Pulse (B.G.P.) to pin (3) Fig. 3-13-1. This IC is designed for use of NTSC demodulator. terminals pin (2) and pin (3)

The demodulation axes of this demodulator are R-Y axis and B-Y axis, Variable capacitor CVI is adjusted so that the phase angles between them are 90°

The variable capacitor CV2 is adjusted so that the free run Local oscillator (3.58 MHz) is formed by CW oscillator in ICI connected to the terminal pin (3, (3, (3, 3)) and external circuit. frequency may be subcarrier frequency 3.579545 MHz.

The color difference signals demodulated by this IC are fed to Also APC (Automatic Phase Control) circuit is formed by APC section in IC1 connected to the terminal pin @ and @ local low pass filter, where high frequency component is removed, oscillator is controlled by APC circuit.

then R-Y and B-Y color difference signals are obtained

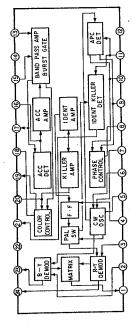


Fig. 3-13-2

25(E) 3

## 3.58 MHz Trap Circuit, Phase Compensation, Y **Delay Correction Circuit**

When NTSC system is not selected by the COLOR STANDARD SELECTOR in the right side drawer, transistor Q101 is cut off and  $\pm$  12V line power source is not supplied to the demodulator

Color Standard Selector

3-13-7.

The composite video signal from the emitter of transistor Q1 is fed to 3.58 MHz trap circuit composed of resistor R5, R6, R7, capacitor C1 and inductor L1.

circuit.

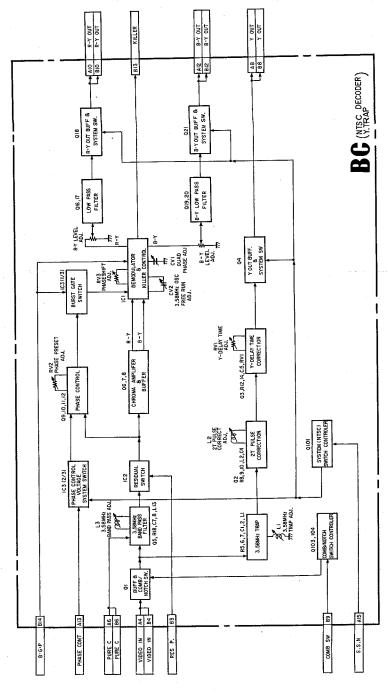
Adjustment of L1 is made so that the resonance frequency of this Y (Luminance) signal removed subcarrier is obtained at output trap circuit should be subcarrier frequency.

terminal of the trap circuit and is fed to the phase compensation circuit. (Transistor Q2, resistor R8, R9, R10, inductor L2 capacitor C4)

This circuit compensates phase delay of the signal at high frequency due to the trap circuit.

Y signal compensated phase delay is fed to Y-delay circuit. In this circuit Luminance/Chrominance time error is compensated

## BLOCK DIAGRAM OF BC BOARD



### 3-26(E)

# 3-14. VERTICAL DEFLECTION OUTPUT CIRCUIT CONVERGENCE OUTPUT CIRCUIT (EB BOARD)

## 3-14-1. Vertical Deflection Output

Vertical Deflection Output amplifier is composed of DC coupled SEPP (single Ended Push Pull) amplifier (Q1 to Q5) and boost

This burst up circuit containes transistors Q7 and Q8 to reduce power consumption by applying the voltage to the output transistor during vertical retrace time.

circuit.

Both vertical rate sawtooth waveform and correction waveform for top and bottom pincushion are generated in DA board and fed to output amplifier. Vertical centering is performed by changing DC level of vertical rate sawtooth because Vertical DY (Deflection Yoke) is connected to output amplifier directly.

## 3-14-2. Convergence Yoke Output Circuit

CY (Convergence Yoke) is used for adjustment of misconvergence of vertical direction. This CY is driven by SEPP (single Ended Push Pull) amplifier (Q9 to Q13) and connected directly. Correction waveform is provided from DB board.

# 3-14-3. DCT (Dynamic Convergence Transformer) Output Circuit

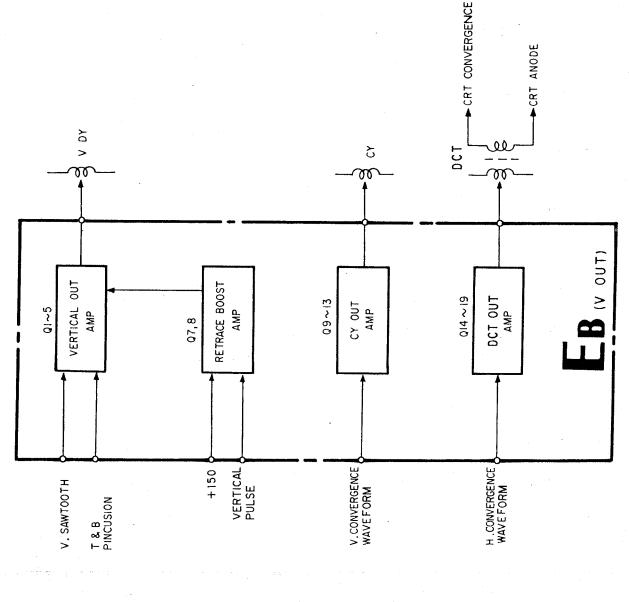
This circuit is used for adjustment of misconvergence for Horizontal direction.

DCT is also driven by SEPP amplifier (Q14 to Q19) and AC coupled to it.

Correction waveform is provided to the primary of DCT and transferred to the secondary windings, output voltage of secondary windings is applied to CV electrode of CRT (picture tube) and performed convergence adjustment.

Circuit diagram shown in Fig. 3-14-1. is the theory of basic DCT

## BLOCK DIAGRAM OF EB BOARD



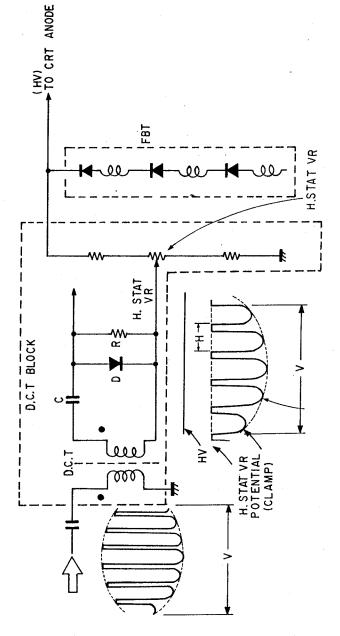


Fig. 3-14-1.

3-28(E)

# 3-15. POWER SUPPLY CIRCUIT (GA, GB BOARDS)

## 3-15-1. AC Power Supply, Rectifler Circuit

In case of AC 100/120V selected by voltage selector, rectifier D21 capacitors C80 and C81 operate as double multiple rectifier. Voltage selector located at the rear side of the unit should selected to the local line voltage (AC 100/120V or 220/240V). See Fig. 3-15-1.

In case of AC 220/240V selected by voltage selector, rectifier D21 capacitors C80 and C81 operate as a full-wave rectifier. See Fig. 3-15-2.

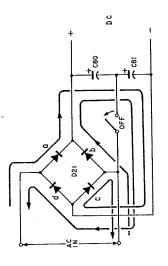
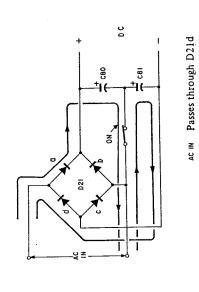


Fig. 3-15-1



Passes through D21a

and charges to C81.

AC

AC IN

and charges to C80.

Fig. 3-15-2.

## 3-15-2. Degauss Circuit

There are 2 posistors (PTH1, PTH2) in the degaussing circuit. One is used for AC 100/120V operation, the other is for AC 220/240V operation, these posistors are switched by voltage

This degaussing circuit is turned ON and OFF by using Relay (RY1) automatically. selector.

When power is turned ON, Automatic degaussing starts to work

minutes power is turned on when posistor (PTH1 or PTH2) gets cool down. This manual degaussing is operated by a push of button (Degauss Switch) at the left of the front panel. Also Manual degaussing is available if necessary after a few and a few seconds later stops automatically.

When degaussing circuit starts to work, Q11 transistor turns on by time constant circuit composed of resistors R88, 91 and capacitor C74. Q11 drives Q12 transistor. Relay (RY1) is driven by O12. Time constant circuit keeps degaussing circuit to activate for several seconds until degaussing is finished.

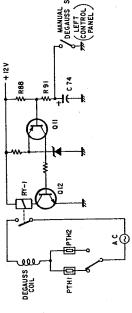


Fig. 3-15-3.

### Starter Circuit

IC through D20. At the same time, a voltage for stopping the D7 and C57 in T4 secondary circuit, is supplied to the regulator-circuit IC (IC2 and IC3) with line voltage of 50 to 70V AC (at 110/120V AC) by function of the start-rectifying circuit (Q7, Q8, Q9). And the regulator circuit starts working and as +15V-line workds, the voltage is supplied to the regulator-circuit blocking-oscillator operation is provided to IC1 from the primary Blocking oscillator composed of IC1 and T4 starts working by turning the power on. DC output voltage of the rectifying-circuit, winding (6 - (7) of the switching regulator transformer SRT2.

### **Switching Regulator Circuit** 3-15-4.

Block diagram is shown in Fig. 3-15-4. This is half bridge type of switching regulator in this model.

## Following Description is the Theory of Half-Bridge Switching Regulator.

of T1 (SRT) by switching transistor Q1 via T3 (Current section is divided by capacitor C1 and C2. C1 and C2 have almost same value. Q1 (contains 2 transistors) operates as a DC voltage Ein rectified from AC voltage in AC power rectifier switch driven by PWM modulated pulse via T2 (Drive Transformer). Switching current flows through primary windings Transformer).

Thus output voltages are generated at secondary windings of T1.

## Practical Circuit Used in this Model

There are 2 switching regulators in this power supply. One is for low voltage power supply,  $\pm$  15V,  $\pm$  18V and  $\pm$ 5V. The other is for high voltage  $\pm$  150V power supply.

Low voltage are generated by IC2, T1, T2, T3 and Q1. High voltage are generated by IC3, T6, T7 and Q2.

capacitor) on IC2 and IC3 and the regulator stops its operation to

protect the circuits.

GB board, mounted on the GA board, is a protection circuit that when the output voltage surpasses the rated value for some reason, it makes short-circuit the CT (frequency-determination

3-15-5. Over Voltage Protector

Refer to block diagram.

current in Current Transformer T3 and T7 detects excess transistor Q1 and Q2 for the protection of damage.

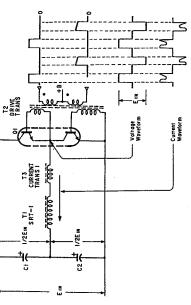
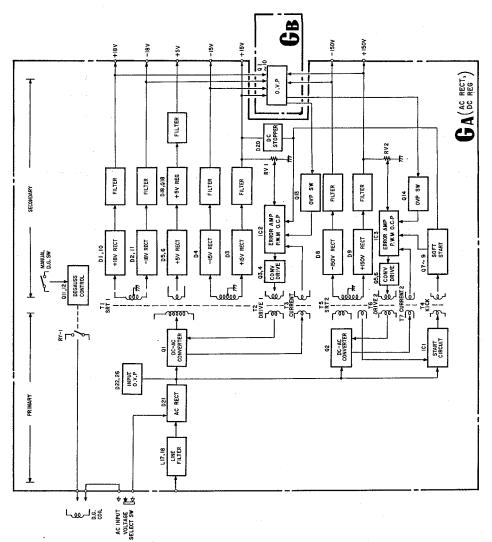


Fig. 3-15-4.

## **BLOCK DIAGRAM OF GA, GB BOARDS**



3-30(E)

### (DB, DC BOARDS, DCT BLOCK) CONVERGENCE CIRCUIT 3-16.

## **General Description**

This is a simple explanation of the convergence system in Super fine Trinitron picture tube used in this model.

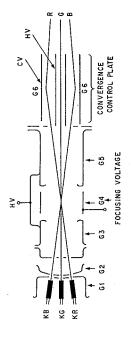
The Deflection Yoke (DY) used in this model generates an almost uniform magnetic field in order to get fine beam spot size. Accordingly basically misconvergence of horizontal direction as The Deflection Yoke (DY) used in this model generates shown in Fig. 3-16-1. is generated on the picture screen.

Horizontal misconvergence of X axis direction R G B Horizontal misconvergence of Y axis direction G B R G B R

Fig. 3-16-1.

### 3-16-2. Static Electrorical Convergence System Trinitron system has a unique static convergence system. The structure of electric gun is shown in Fig. 3-16-2.

G6 is the electrode for convergence. Static electrorical convergence control can be used. In this system beam spot deterioration is less than that of the electromagnetic system.



Convergence Correction Circuit (Horizonta Fig. 3-16-2.

Misconvergence of horizontal direction on Y axis is corrected by Convergence) 3-16-3.

applying vertical rate parabola waveform to the convergenc And misconvergence of horizontal direction is corrected by plate (G6).

applying horizontal rate parabola waveform to G6. See Fig. 3-16-3.



HORIZONTAL MISCONVERGENCE

Fig. 3-16-3.

In this model, transformer is used to supply correction voltage to the G6 electrode for the horizontal direction misconvergence. In the secondary of the transformer peak clamp circuit using diode is applied so that both the vertical rate parabola waveform and horizontal rate parabola waveform are mixed and supplied to CV electrode. See Fig. 3-16-4.



Fig. 3-16-4.

The correction waveforms are generated in DB board and output amplifier is located in EB board

## 3-16-4. Vertical Convergence

Theoretically there is no misconvergence of Vertical direction since electric gun is aligned in line. But there is a slight amount of misconvergence due to the variations of CRT and DY and also due to the terrestial magnetism.

There are also 2 kinds of misconvergence of vertical direction on X axis and Y axis as same as horizontal direction.

Misconvergence of Vertical direction on X axis is corrected by CY (convergence yoke).

beam and Blue beam are moved to the vertical direction neck, it is not affected by the magnetic field of CY due to the Misconvergence of vertical direction on Y axis is corrected by differentially by CY. As Green beam is at the center of the CRT Fig. 3-16-5, shows the CRT neck as seen from the rear side. cancellation of the magnetic field at the center of the neck. Red

A Neck Twist Coil is wound around the center of electrode G2 to G3 (See Fig. 3-16-5.) for the correction. Theortically, as the RED NTC (Neck Twist Coil),

Blue beams have HI component (They are opposite However as magnetic field of the NTC is the parallel to the direction) as seen in Fig. 3-16-5,, they move to the vertical direction due to the magnetic field generated by NTC.

amplifier of CY is in EB board and output amplifier of NTC is in Correction waveform generator is located in DB board, output Green beam, Green beam is not affected

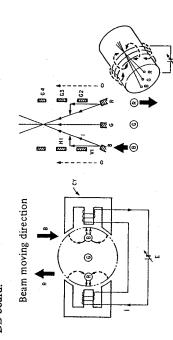
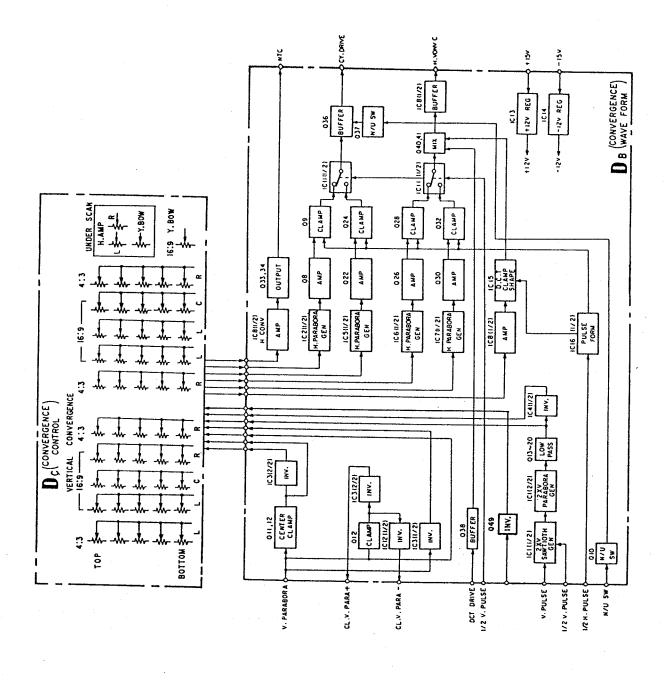


Fig. 3-16-5.

## **BLOCK DIAGRAM OF DB, DC BOARDS**



# 3-16-5. Convergence Correction Waveform Generator (DB BOARD)

This monitor incorporates unique convergence circuit which can adjust convergence at 15 positions of the picture screen, each 15 potentiometers for horizontal and vertical convergence adjustments are located on the left side of the drawer corresponding to the picture screen.

# 3-16-6. Horizontal Convergence Correction Waveform Generator

A vertical rate parabola waveform is supplied to the DB board from the DB board and is inverted and switched to make correction waveform.

For the left side of the picture screen, the correction waveform is compounded by adjusting potentiometers RV16 to RV20 on the DC board. This waveform is converted to horizontal rate parabola waveform which level is proportional to the compounded waveform by H parabola generator (IC6, Q25). This is amplified by transistor Q26 and clamped at the center position of the horizontal period by transistor Q28 and IC6. See Fig. 3.16.

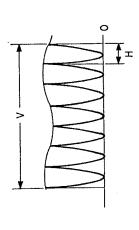


Fig. 3-16-6.

For the right side of the picture screen, the correction waveform is generated by adjusting potentiometers RV26 to RV30 on the DC board as same as the left side of the picture.

These correction waveforms (left and right side) are switched and

mixed by analog switcher which activates at 1/2H period as seen in Fig. 3-16-7.

Fig. 3-16-7.

S. 39

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As a result, right side adjustments and left side adjustment can be performed independently of each other.

For the center of the picture screen, vertical parabola waveform is compounded to the correction waveform by adjusting potentiometers RV21 to 25 on the DC board, and converted to horizontal pulse. This means amplitude of horizontal pulse is modulated by vertical parabola. (Q40, Q41) See Fig. 3-16-4.

This modulated pulse is mixed with horizontal parabola for left and right side correction. This mixed waveform is amplified and supplied to convergence plate in CRT via DCT. Thus horizontal convergence is corrected. See Fig. 3-16-8.

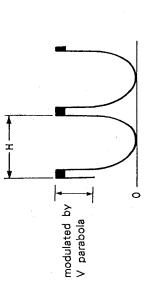
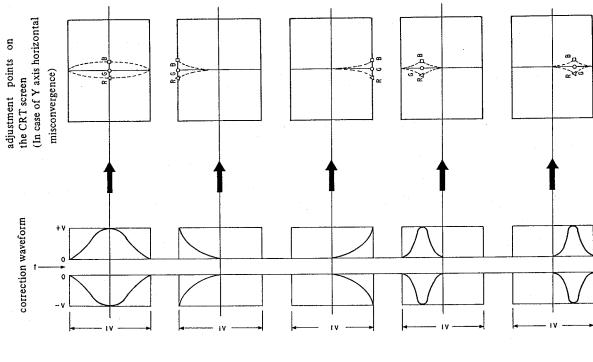


Fig. 3-16-8.



# 3-16-7. Vertical Conevergence Correction Waveform Generator

For the left and right side of the picture, correction circuit for vertical convergence is same as horizontal correction circuit of left and right side of the picture. The correction waveform is amplified in EB board and supplied to CY.

For the center of picture screen, correction waveform is fed to amplifier (IC8 (1/2), Q33, Q34) and supplied to NTC (Neck twist Coil.)

This vertical convergence is performed.

## Diagram of correction waveform generation

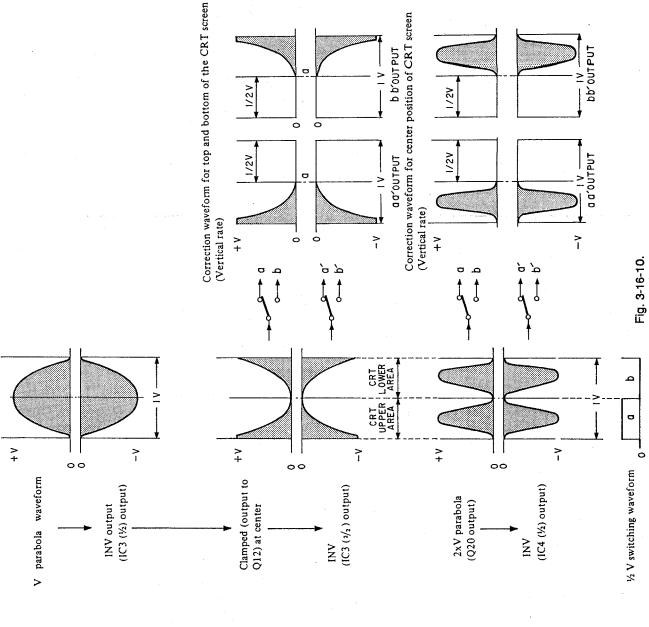


Fig. 3-16-9.

3-33(E)

# 3-17. DEFLECTION CIRCUIT (DA BOARD)

### H Delay and Horizontal AFC (Automatic Frequency Control) Circuit

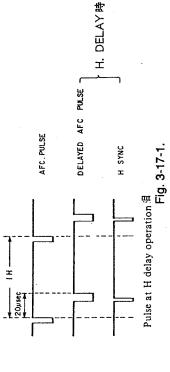
In this model H delay function is performed by delaying H. AFC pulse in the horizontal AFC circuit. (See Fig. 3-17-1.)
H. AFC pulse which is fed from H.O.T. (Horizontal Output

 $\overline{C}$ transformer) is wave shaped and is delayed about 20  $\mu$ s by

C14, thus sawtooth waveform is obtained and fed to terminal pin ( ) of IC4. AFC detection is performed by IC4, Output of AFC This delayed pulse is integrated by inductor L1, and capacitor detector is fed to control terminal of horizontal oscillator (H.OSC) via low pass filter composed of capacitor C12, C15 and resistor R10.

3 types of AFC mode are selected by changing low pass filter which determines AFC time constant.

AFC time constant circuit is composed of switch S1, resistor R13, R14, R15 and capacitor C17, C18.



# 3-17-2. Horizontal Linearity Correction Circuit

ፏ source of horizontal output circuit with horizontal sawtooth Basically, Linearity correction is made by modulating power applying correction voltage to the Horizontal deflection circuit. In this model Horizontal Linearity correction is made

á, Also So-called "Inside pincushion" correction is performed applying correction waveform to S correction capacfitor.

parabola waveform is generated by integration of saw tooth by IC6 (1/2). This parabola waveform is performed balanced modulation by IC7 with vertical rate parabola waveform, horizontal sawtooth This correction waveform is generated by balanced modulator for and parabola waveform are fed to horizontal linearity output amplifier in EA board. Correction of horizontal linearity Horizontal sawtooth waveform is generated by ICS (1/2) (IC7) with vertical rate parabola waveform. See Fig. 3-17-2. correction and inside pincushion correction are performed. Horizontal rate linearity correction.

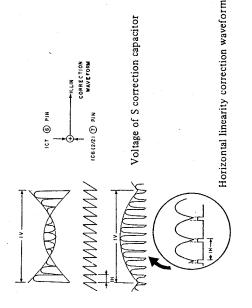


Fig. 3-17-2.

### Horizontal Blanking Pulse Generator 3-17-3.

Horizontal rate sawtooth waveform generated in H. Linearity circuit is fed to the comparator IC8 (1/2). In this circuit, 1/2H delayed pulse is obtained. This pulse is fed to integrator IC9 (1/2) and 1/2H delayed sawtooth waveform is obtained and this is fed to the comparator IC10 (1/2).

Blanking pulse which starts just before the starting edge of the retrace time. Also width of horizontal blanking pulse is Thus the comparator generates horizontal pulse to make determined by JK-FF IC1 (1/2).

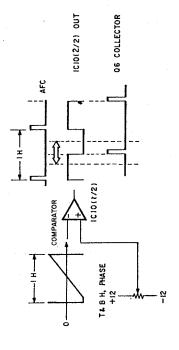


Fig. 3-17-3.

## Top & Bottom Pincushion Circuit

Bottom pincushion correction is delayed about 1/2H for this circuit is also fed to IC10. IC10 generates advanced H pulse for the phase correction because vertical Deflection Yoke works as an integrator at horizontal rate, and deflection current for Top & Horizontal rate sawtooth waveform generated in H Linearity reason. See Fig. 3-17-3.

Advanced H pulse is fed to IC11 (1/2) and advanced horizontal sawtooth waveform is generated. It is integrated by IC11 (2/2) and horizontal rate parabola waveform is obtained

Modulated butterfly waveform for Top & Bottom pincushion correction is obtained by Balanced modulator IC12. In this balanced modulator, horizontal rate parabola waveform is used as a carrier and vertical rate sawtooth waveform is modulated by this carrier. See Fig. 3-17-4.

This correction waveform is fed to vertical deflection output amplifier in EB board.

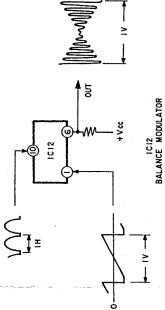
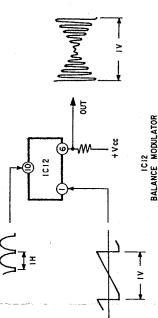


Fig. 3-17-4.

This model has an automatic vertical field frequency selection circuit so that color systems with different frequencies such as NTSC or PAL and SECAM can be received. IC18 is automatic field frequency detection device and its output switches (IC13) time constant of integrator in vertical deflection circuit.



# Automatic 50/60 Hz Field Selection Circuit

## Scan Mode Selection Circuit

There are 3 modes of scanning in this model: NORMAL SCAN/UNDER SCAN/SET UP SCAN.

There are level adjustments for H1 width, V, height side pincushion and top & bottom pincushion.

Levels of correction waveforms are switched so that these adjustments are made independently for each scanning mode. IC14, IC15 and IC16 activates for this purpose.

### Vertical Deflection, Side Pincushion Correction 3-17-7.

IC19 (1/2) generates vertical rate sawtooth waveform for vertical deflection. V sawtooth waveform is generated by the integrator IC9 (1/2) which is reset by V sync.

integrating þ generated Also vertical rate parabola is sawtooth waveform by IC9 (2/2)

This V parabola is used for side pincushion correction, and also V. parabola is converted to sine waveform by IC20 (1/2) and is mixed with V parabola waveform. This mixed waveform is used for side pincushion correction and fed to side pincushion output amplifier in EA board.

ģ mixing vertical rate sawtooth waveform generated by IC19 (1/2) Vertical drive voltage for vertical deflection is and sine waveform generated by IC22 (1/2).

This drive waveform is fed to vertical deflection output amplifier. Balance adjustment of vertical linearity correction can be performed by IC22 (1/2) and vertical centering can be adjusted by IC22 (2/2)

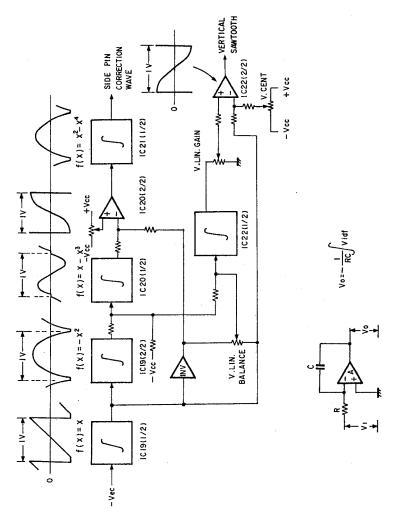
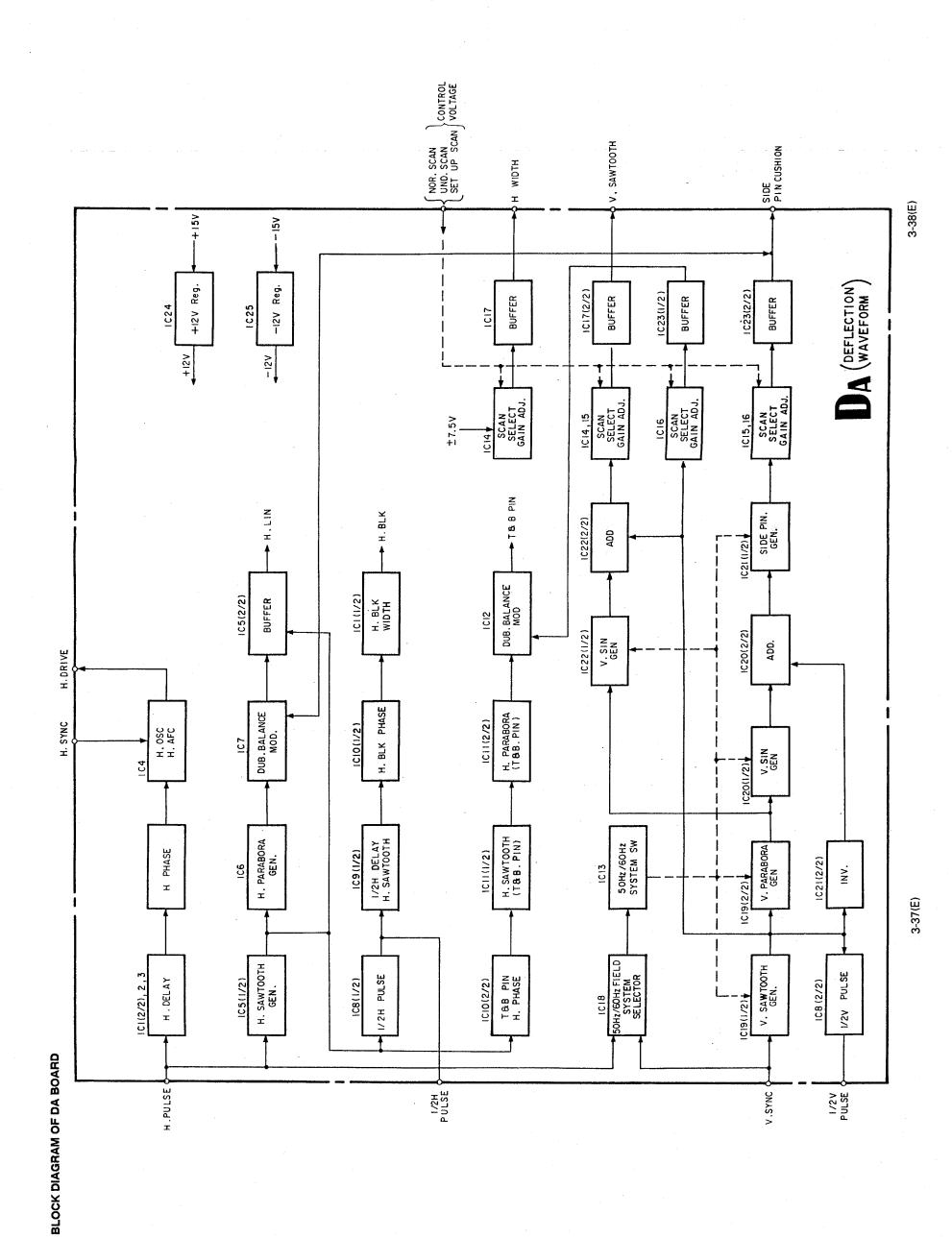


Fig. 3-17-5



# 3-18. HORIZONTAL OUTPUT (EA BOARD)

## 3-18-1. Horizontal Deflection Circuit

Horizontal drive pulse for Horizontal deflection output is made at DA board and is fed to T4 (Horizontal Drive Transformer) via Q13 (H. driver). T4 is driven by Q13 and output pulse of T4 drives Q14 (Horizontal Output Transistor).

This converted Line voltage is fed to horizontal deflection output circuit via H.O.T (Horizontal Output Transformer). Side pincushion correction and H. width adjustment are made by this DC-DC converter. IC1 contains error amplifier and PWM (Pulse Width Modulator) circuit for DC-DC converter. Side pincushion correction waveform and DC voltage for H. Width adjustment are made in DA board and supplied to error amplifier to control To obtain high efficiency in this model, DC-DC converter is used for side pincushion correction, Horizontal Width adjustment and +B Line voltage conversion to the horizontal deflection circuit. DC-DC converter.

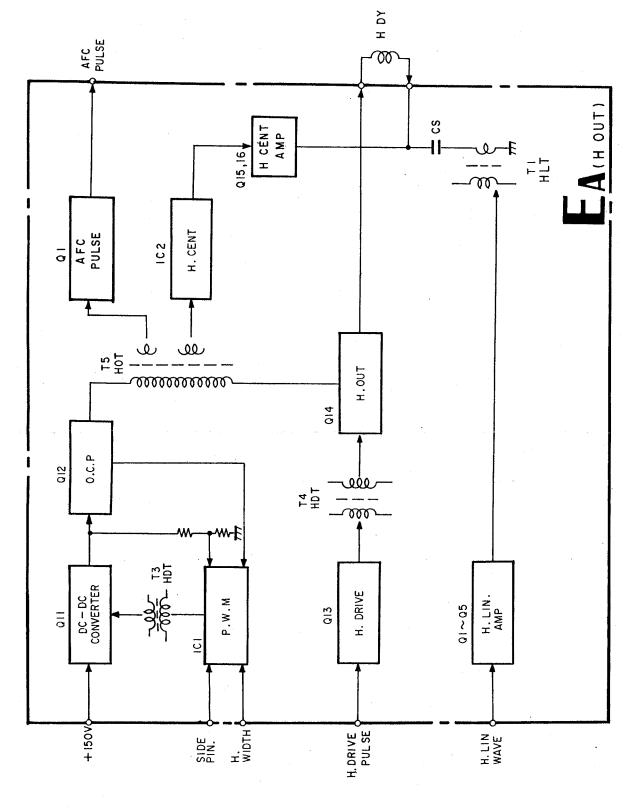
## 3-18-2. Horizontal Centering Circuit

± low voltages power supply for H centering are made in this circuit from output of secondary windings of T5 (Horizontal Output Transformer). These low voltages are converted to current source for mixing DC current on the deflection current. In this circuit Bow shaped geometry distortion due to the H centering adjustment is adjusted by providing vertical rate parabola waveform current on the H centering current.

# 3-18-3. Horizontal Linearity Correction Circuit

Waveform for Horizontal Linearity correction made in DA board is fed to SEPP amplifier (Single Ended Push Pull) which are composed of Q1 to Q5 transistors. Output of this amplifier is fed to H deflection circuit (Deflection Yoke) and make correction of H linearity by T1 (Horizontal Linearity Transformer).

## BLOCK DIAGRAM OF EA BOARD



# 19. HIGH VOLTAGE REGULATOR (PA BOARD)

This high voltage regulator uses also DC-DC converter so as to reduce power consumption.

The theory of operation of this circuit is as follows.

## 3-19-1. Detection of High Voltage

High Voltage applied to the CRT anode is converted to the low voltage by DCT block (Dynamic Convergence Transformer). This low voltage is fed to buffer amplifier IC4 (2/2) and compared with external reference voltage in IC1. The DCT contains resistor-network and transformer for convergence adjustment. This resistor-network works as a voltage divider.

## 3-19-2. PWM Modulator

ICI works are error amplifier and PWM modulator comparing voltage between high voltage and the reference voltage is amplified and modulated so as to drive Q102 output transistor. Output signal from ICI, which is modulated in PWM, is fed to Q102 via drive transformer. +B line supplied to FBT (Fly Back Transformer) circuit is controlled by switching Q102 output transistor on/off.

### 3-19-3. Output Circuit

When high voltage drops down, output voltage of DCT also drops as above mentioned. At this time PWM circuit is designed so that the ON period of Q102 output transistor should be longer than high voltage drops down. +B line, switching ON/OFF by Q102, is supplied to converter circuit which drives FBT via LOT (Line Output Transformer).

Amount of collector current of Q103, which drives FBT, depends upon ON period of Q102 because PWM modulator is triggered by H. pulse. Therefore when ON period of Q102 is longer, collector current of Q103 increases and energy stored in capacitor C124 increases, causing potential of C124 to rise. (Refer to Fig. 3-19-2.) When output transistor Q103 goes off, flyback pulse is generated by resonance between capacitor C108 and inductance obtained by parallel connection of FBT and LOT. This flyback pulse is transferred to the secondary circuit of FBT. Therefore high voltage is generated.

## 3-19-4. High Voltage Regulator

Q102, Q107, IC4 (2/2), IC1 (IC for controlling P.W.M) and HVR (DCT block) form a regulator.

Since the detection pin voltage of HVR is decreased when the high voltage is lowered due to increase of the CRT current, it makes the switch ON time length of Q102 longer. As a result, the collector peak current of Q103 is increased and accordingly, the energy accumulated in C124, which is fed to it through the FBT, is increased. In this way, it raises the potential of C124 and regulates the high voltage.

Q103, C108, C124 and the FBT form a high voltage converter

The pulse of on-duty 60% is generated with the H pulse by a time constant circuit which consists of Q109, Q110, Q111, Q112, R143, C128, R144, C127 and D111. When Q103 is switched OFF due to the on-duty 60% pulse, flyback pulse is generated at the collector of Q103 by resonating of the LOT, FBT and C108.

## 3-19-5. High Voltage Protection Circuit

High voltage protector activates to shut down high voltage, when high voltage exceeds the predetermined value so as to prevent Xray radiation.

The high voltage converted to the low voltage is detected at the terminal of DCT block. This detected voltage is fed to the + input terminal of comparator IC2 (2/2) via low pass filter, which is composed of resistor R245 and capacitor C216. When this voltage exceeds the reference voltage, the voltage of  $\Theta$  input terminal of comparator IC2 (2/2), output level of this comparator goes high level and turns SCR (D206) gate on to shut down the drive pulse of flyback generator. Thus high voltage stops.

The reference voltage of the comparator IC2 (2/2) is made by mixing stabilized voltage (zener diode D215).

# 3-19-6. Protection Circuit for Excess Beam Current

Beam current which flows in secondary windings of FBT is measured at the terminal 9 of FBT. This beam current is converted to the voltage by resistor R1 (R4) and R2 (R3), R5 (R6) located in PB board in, series connection of secondary windings of FBT. This converted voltage is fed to  $\ominus$  input of comparator IC2 (1/2) or IC3 (1/2). As beam current increases.  $\ominus$  input voltage goes down.

When beam current increases until  $\ominus$  input voltage goes below the reference voltage ( $\oplus$  input terminal voltage) output voltage of comparator goes up high level and SCR (D205 and D206) turns ON. Thus drive pulse of flyback generator is shut down. Therefore high voltage stops.

## 3-19-7. CRT Protection Circuit

When vertical deflection stops, this circuit activates to shut down high voltage to prevent damage of CRT.

When vertical deflection stops, there is no vertical output pulse generated at vertical output amplifier. So Q201 transistor is cut off and output of comparator IC4 (1/2) goes up high level. Q202 transistor turns on and flyback generator stops.

## 3-19-8. G2 Voltage Regulator

Flyback pulse generated at Q103 (HV output transistor) is rectified to obtain DC voltage. Q104 transistor which works in accordance with G2 control circuit in BI board supplied proper voltage to G2 of CRT.

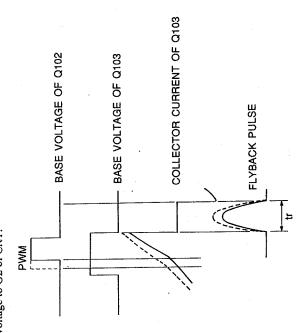


Fig. 3-19-1.

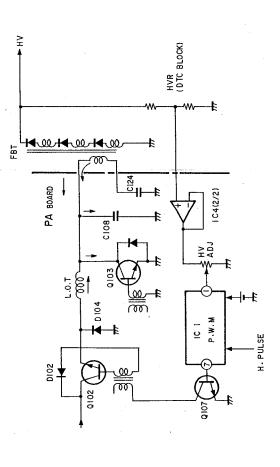
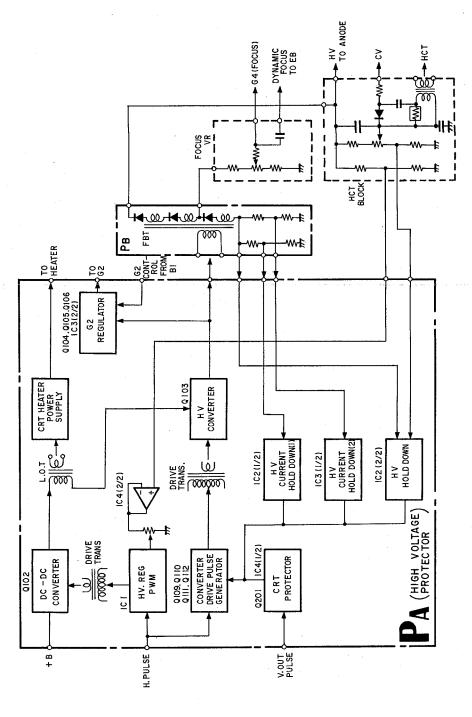


Fig. 3-19-2.

## **BLOCK DIAGRAM OF PA BOARD**

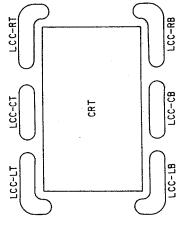


# 3-20. BEAM LANDING CORRECTION CIRCUIT (R1, R2 BOARD)

This monitor is equipped with the six pieces of the beam landing correction coils (LCC=Landing Correction Coil) around the circumference of the CRT. The optimum beam landing is maintained by flowing the appropriate correction current. This beam landing correction is applied to the following points.

- Landing correction that is generated by the direction monitor installation (horizontal earth's magnetism).
- Note: This circuit does not correct for the vertical earth's magnetism. It is corrected by the purity magnets
- 2. Correction for the landing change due to change in ambier
- 3. Correction for the landing change due to change of beam
  - current in average.

    4. Correction for the landing change due to specific CR1 landing characteristics.
- 5. Correction for the landing change due to partial disturbance of the ambient magnetic field.



## (As viewed from CRT end)

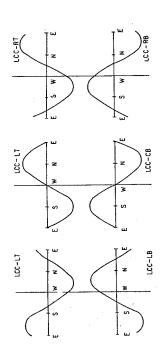
Fundamental correction circuit of the landing correction system is shown as follows. Explanation is discussed block by block.

## Fundamental block diagram

## **Direction Correction Signal**

As the monitor is installed, it receives the effect of earth's magnetism. The effect of the earth's magnetism is different depending on the direction of the monitor installed. The beam landing receives its effect and the landing change due to the earth's magnetism change corrected by determining the polarities

of the six pieces of the LCCs respectively. Flowing the six different ac sinusoidal electric currents through the six LCCs respectively as shown in Fig. 3-20-1,, can correct the beam landing error due to the earth's magnetism.

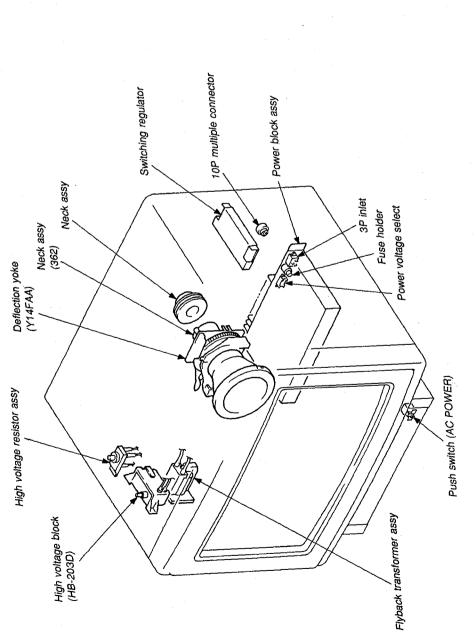


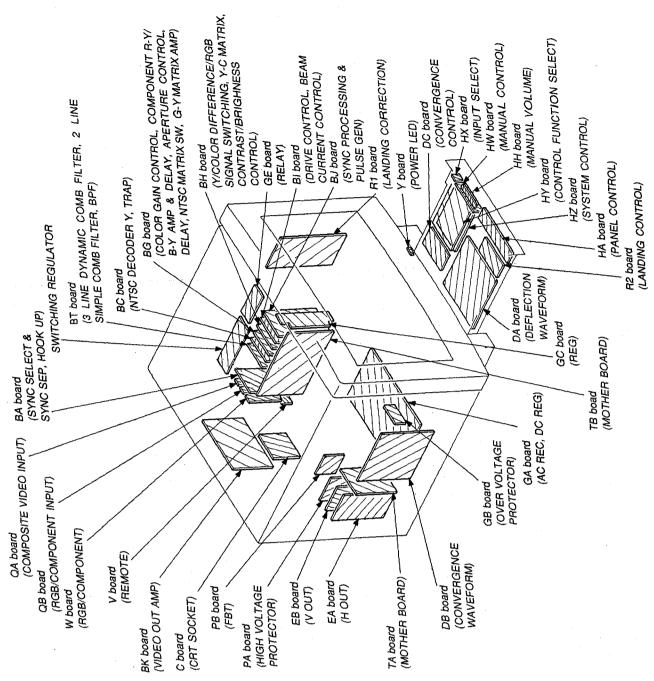
## Direction correction current for LCC

This system has the digital memory that memorizes the direction data for every 1/16th direction. These digital data are memorized in IC3 memory as shown in Fig. 3-20-2. and are supplied to the coils of LCC-LT and LCC-RB only. The switch S1 in the W board provides the 4 bit direction data that corresponds to the ROM addresses A0 through A3. The least address A4 receives 0 and 1 output alternatingly at vertical rate, which is supplied from IC2 ⑦ pin. Thus the landing correction data are obtained from ROM and determined by S1, and are supplied to the dual D/A convertors of IC4 where data are latched. These are dual data for LCC-LT and for LCC-RB. These two digital data are fed to the IC4 dual D/A convertor alternatingly at vertical rate. The analog converted data are then buffered and output to the LCC driver circuit as the landing correction signal. The LCC-LB and LCC-RT correction signals are obtained by reversing the LCC-LT and LCC-RB signal with IC5 (2/2) and IC6 (2/2).

LCC-LT and LCC-RB signal with ICS (2/2) and IC6 (2/2). Amplitude of these waveforms can be adjusted by shifting the D/A convertor's reference voltage with RV1, depending upon the strength of earth's magnetic field effect. The LCC-CB correction signal is obtained by adding both the LCC-LB and LCC-RT correction signals by IC7 (1/2). The added output is further inverted to produce the LCC-CT correction signal. Amplitude of these signal waveforms can be adjusted by RV2, and adjusted depending upon the strength of horizontal earth's magnetic field effect.

A4 A3 A2 A1 A0 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 0 1 1 0 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1	i c		'	Address			Ş
	Diecion	<b>A4</b>	A3	A2	A1	Ao	Z a
00000	14-514	0	0	0	0	0	LT0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Notice	0	0	0	0	-	RB0
000	No at Alouth (Cost	0	0	0	0	0	5
0 0	North/North/East	0	0	0		-	184
0	Manufacture	0	0		0	0	LT2
	Normeast	0	0	-	0	_	RB2
	•	•			٠	•	•
	•	•	•	•			
	•			•	•		•



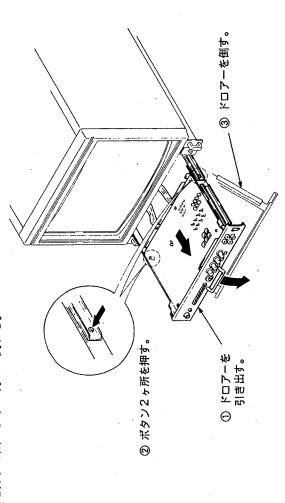


4-2(기)

										·										
2	3-21	1	3-25	5-91	5-89	7-40	HZ	1	ı	1	5-119	5-116	1-50	Z	l	1	1	5-135	1	7-59
DB	3-21	ı	3-22	5-83	5-85	7-37	Н				5-115	5-111	7-48	>	l	1.	1	5-114	5-112	7-59
DA	3-29	4-63	3-31	5-81	5-78	7-34	HX		1	1	5-114	5-111	7-48	*	-	1		5-123	5-126	7-59
ပ	I		-	5-106	5-110	7-34	HW		I	l	5-113	5-111	7-48	^		****	. !	5-124	5-126	7-58
ВТ	3-17	4-49	3-17	5-65	5-63	7-25	푶	1	l .	l	5-113	5-111	7-48	13	-		***************************************	5-15	5-17	7-58
BK.	3-13 3-15	4-47	3-13	5-59	5-61	7-22	НА		1	ı	5-113	5-112	7-47	TA		l	1	5-11	5-13	7-58
B	6-6	4-21 4-32 4-46	6-6	5-57	5-54	7-20	GE	-			5-129	5-133	7-47	R2	3-37		1	5-129	5-131	7-57
<u>a</u>	3-7 3-15	1	3-7	5-49	5-51	7-18	GC	-	1		5-123	5-125	7-47	Æ	3-37			5-128	5-131	7-55
BH	3-5	4-23	3-2	5-47	5-44	7-15	GB	3-33	ı	3-34	5-100	5-103	7-46	OB	3-1		3-2	5-123	5-125	7-54
BG	3-3	4-23 4-29	3-4	5-39	5-41	7-13	GA	3-33	4-13	3-34	5-101	5-103	7-44	OA	3-1	ı	3-2	5-123	5-125	7-54
BC	3-19	4-33	3-20	5-29	5-31	7-8	EB	3-25		3-26	5-95	5-97	7-43	PB	3-35	1	3-38	5-106	5-110	7-54
ВА	3-1	4-23 4-27	3-2	5-19	5-21	7-2	EA	3-27		3-28	5-94	2-97	7-41	PA	3-35	4-15	3-36	5-107	5-109	7-52
BOARD	CIRCUIT	ADJUSTMENTS	BLOCK DIAGRAM	MOUNTING	SCHEMATIC DIAGRAM	ELECTRICAL PARTS LIST	BOARD	CIRCUIT DISCRIPTION	ADJUSTMENTS	BLOCK	MOUNTING	SCHEMATIC DIAGRAM	ELECTRICAL PARTS LIST	BOARD	CIRCUIT	ADJUSTMENTS	BLOCK	MOUNTING	SCHEMATIC DIAGRAM	ELECTRICAL PARTS LIST

DC board HY board 0 ត្តិន⊛ H. CENT LIN OH. BLK WIDT 1/8 BAL V. LIN BAL V. LIN V CENTER H CENTER 4-4. サブコントロールパネルロケーション DA board HA board APERTURE O 0 0 🛮 H. PHASE O H. BLK PHASE O O E R2 board

ドロアーブロックの調整方法 • サブコントロールパネルを引き出し,ストッパーボタン 2個を押すと図のように約60°倒れる。



4-3(1)

4-4())

### ブラウン管交換時の基礎調整 4-5

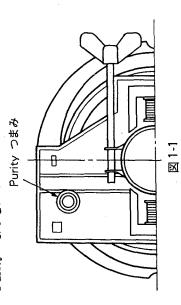
ブラウン管を交換した場合の調整方法を説明する。なお, 通 ゼンスおよびホワイトバランス調整はサ ブコントロールパネルのボリュームで調整する。 常の場合、コンバー

### [必要な治工具・測定器]

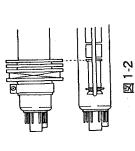
- SIGNAL GENERATOR (TEKTRONIX 1410 > 1)
- カラーアナライザー  $\ddot{c}$ 
  - 輝度計 က

### ンディング調整] Ē

- BRIGHTNESSおよびCONTRAST VRをプリセット SIGNAL GENERATORを接続し、白信号を受像する。 Q
- CRT 画面を東(または西)方向に向け,DEGAUSSス က
- Purity つまみをメカニカル・センターにする。(図1-1) イッチを押す。



- **DY(ディフレクションヨーク)を, できるだけ前方に** 押し出す。 က်
  - ネック組立てを図1-2のような位置に固定する。 ဖ



**レロントパネル** 

• 🗆 4-5(J) Dour TOOLT SCREEN SW S₹ SCREEN SW APER BLUE MONO TURE ONLY MODE SCREEN B R L S D SCAN MODE Ħ DEGAUSS 

- 画面を緑単色にする。(フロントパネルのRとBはINポ GはOUTポジショ ジャョン、 ۲.
  - Purity つまみをまわし図1-3のように画面のセンタ ーンが来るようにする。 にグリ  $\infty$

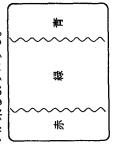
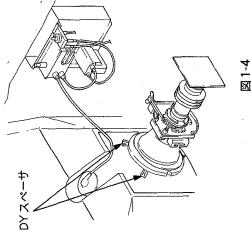


図1-3

- DY を後方にずらし, 画面全体がグリーン単色になるよ တ်
- 同じく画面を赤単色にし(フロントパネルのGとBは INポジション, RはOUTポジション) 画面が赤単色に なるようにする。 10.
- はい INポジション, BはOUTポジション), 画面が青単色に 同じく画面を青単色にし (フロントパネルのRと なるようにする。 1
  - DYの傾きを調整し, DYの締めつけネジを締める。 クを固定する。(図1-4) - 3個で偏向ヨー スペーサ 12. 13.



調整後、セットを東西南北のいずれかの方向に向けてもミ スランディングがないことを確認する。 最終確認

### 一カス調整] $\mathcal{L}$

- SIGNAL GENERATOR (1410シリーズ)を接続する。
  - ドット信号およびクロスハッチ信号を受像する。 ø
- FOCUSコントロールにて画面中央部がフォーカス最良 点になるように調整する。(図1-5参照) က

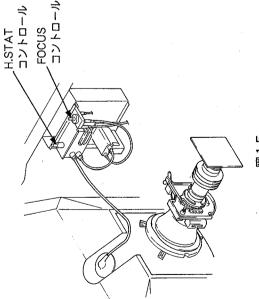
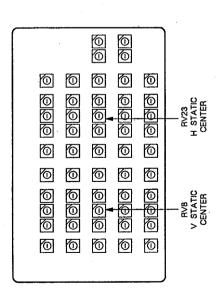


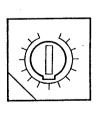
図 1-5

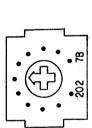
### [コンバーゼンス調整]

- SIGNAL GENERATORを接続し、ドット信号および クロスハッチ信号を受像する。
- ドット信号およびクロスハッチ信号の見やすい所に CONTRASTおよびBRIGHTNESSつまみで調整する。 તાં
- $\sqrt{R}$ 図1-6のように, DC基板のH.STATIC CENTER (RV23) をメカニカルセンターにする。 က



メカニカルセンタ \*





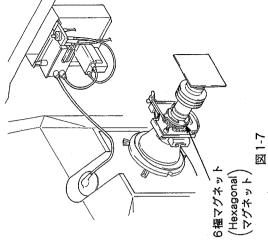
### (静コンバーゼンス)

### 水平静コンバーゼンス

- HV BLOCKのH.STATにて画面中央部水平方向で赤
  - と緑のドットを重ね合わせる。 この時, 赤と緑のドットに対して青のドットがずれてい る場合は6極アグネットにてHMC補正を行う。 જાં
    - 6極アグネットを動かし、水平静コンバーゼンスを補正 する。(図1-7参照) က

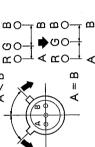
### 垂直静コンバーゼンス

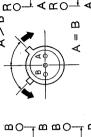
- 画面中央部垂直方向で赤と緑のドットを重ね合わせる。 CENTER (RV8) を調整し DC 基板の V.STATIC
  - この時, 赤と緑のドットに対して青のドットがずれてい る場合は6極アグネットにてVMC補正を行う。 Ø
- 6極アグネットを動かし, 垂直静コンバーゼンスを補正 (図1-7参照) က



- 6 極マグネットによる HMC と VMC の補正
- ゼンス)補 6 極マグネットのHMC (水平ミスコンバ・ ームの動き 正と, 電子ビ

B V € HMC維用





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**★**(20)

CO. B

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8

HMC補用

図 1-8

6極マグネットのVMC(垂直ミスコンバーゼンス) 正と, 電子ビームの動き。 જાં

VMC補正(A)

<u>@</u>

VMC補圧

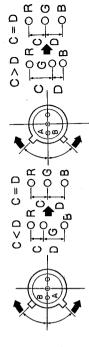


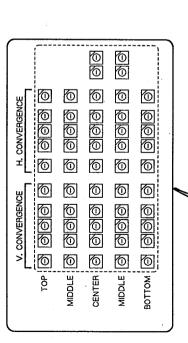
図 6-

⊠ 1-6

### スペクト比4:3のコンバーゼンス調整〕 $\mathcal{P}$

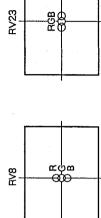
- ASPECT ボタン (サプコントロールパネル)……4:3 DC 基板の CONVERGENCE VR (RV1~RV30) に
  - て調整する。(図1-10参照) જાં
- 緑に対して、赤と青が左右対称に動くように調整す (緑は動かない) က
- 致させる 下記のように, 画面部分にコンバーゼンスを-ように調整する。 4
- $\gamma$ П 一部の順でいっも, П 中央→Y軸上→X軸上→ バーゼンスを合わせる。 ь;

### DC基板



## (コンバーゼンス調整順序)

- 9 UNDER SCAN スイッチ……NOR
- DC 基板の KV23 と RV8 にて画面中央部で赤・緑・青 のドットが重なるように調整する。(図1-11参照)



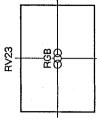
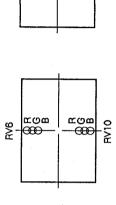


図1-11

RV10, RV21, RV25にて赤・緑・青 (図1-12参照) のドットが重なるように調整する。 DC 基板の RV6, က



응[ -

**RV21** 



図1-12

DC基板のRV3, RV13, RV18, RV28 にて赤・緑・青 (図1-13参照) のドットが重なるように調整する。 4.

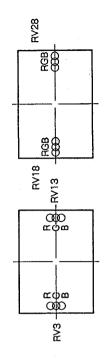


図1-13

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W16 W21

16:9

CONVERGENCE

16:9 § (O **何** 

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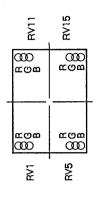
0

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0

0

DC基板のRV1, RV5, RV11, RV15にて赤・緑・青 (図1-14参照) のドットが重なるように調整する。 က်



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RV10 RV15

図1-10

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<u></u> RV18 RV23

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図1-14

DC基板のRV16, RV20, RV26, RV30 にて赤・緑・青のドットが重なるように調整する。(図1-15参照)

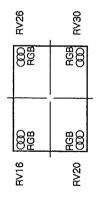
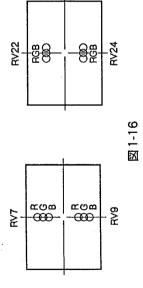


図1-15

DC基板のRV7, RV9, RV22, RV24にて赤・緑・青のドットが重なるように調整する。(図1-16参照)



DC基板のRV2, RV4, RV12, RV14にて赤・緑・青のドットが重なるように調整する。(図1-17参照)

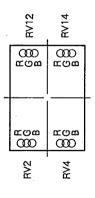
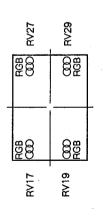


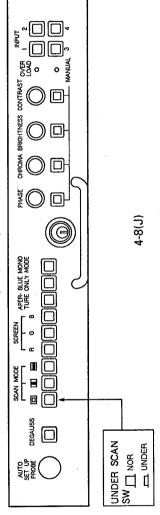
図1-17

DC基板のRV17, RV19, RV27, RV29にて赤・緑・青のドットが重なるように調整する。(図1-18参照)



フロントパネル

図1-18



• 🗆

10. UNDER SCANスイッチ………UNDER(Å) 11. DC基板のRV31 (UNDER SCAN Y.BOW)にて赤

DC基板のRV31 (UNDER SCAN Y.BOW) にて赤・緑・青のドットが重なるように調整する。(図1-19参照)

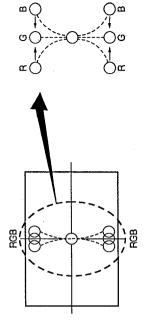


図1-19

12. DC基板のRV32, RV33 (UNDER SCAN H.AMP)にて赤・緑・青のドットが重なるように調整する。(図 1-20参照)

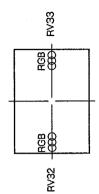


図1-20 サブコントロールパネル (HY 基板)

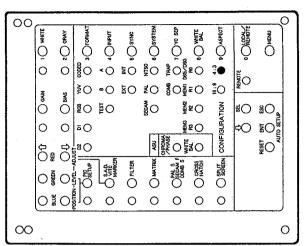
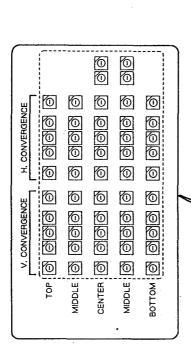


図 1-23

[アスペクト比16:9のコンバーゼンス調整]

- ASPECT ボタン (サブコントロールパネル)…16:9 DC基板のCONVERGENCE VR (RV41~RV60) に
  - 緑に対して、赤と青が左右対称に動くように調整する。 て調整する。(図1-21参照) (緑は動かない) က
    - 一致させる 下記のように, 画面部分にコンバーゼンスを-ように調整する。 4
- $\gamma$ П 中央→ V 軸上→ X 軸上→コーナー部の順でいつも, ガンスを合わせる。 ശ

### DC基板



## [コンバーゼンス調整順序]

- UNDER SCAN X 4 " F ......NOR (II) ≓ %
- DC 基板のRV43, RV48, RV53, RV58 にて赤・緑・ 青のドットが重なるように調整する。(図1-22参照)

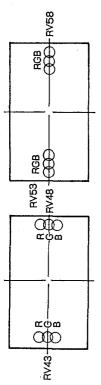
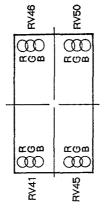


図 1-22

DC 基板の RV41, RV45, RV46, RV50 にて赤・緑 青のドットが重なるように調整する。(図1-23参照) က



0 H. CONVERGENCE RV16 RV21 RV26 0 16:9 0 3\51 O CONVERGENCE 16:9 0 R 8 . 0 \$ O

<u></u> 0 RV17 0 0 0 8 0 % \{\int\_{2}\}

0 0 0 \$ \frac{1}{2} \$ 0 \$ 0 \$ O \$ 0 0 **2** 0 § 🗑 \$ O

RV61 0

> § (1) RV20 RV25 RV30 \$ O RV10 RV15 \$ O \$ 8

§ 60 %

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図1-21

6.

青のドットが重なるように調整する。(図1-26参照) DC 基板の RV52, RV54, RV57, RV59 にて赤・緑

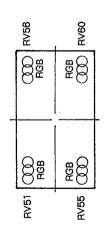


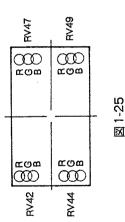
図 1-24

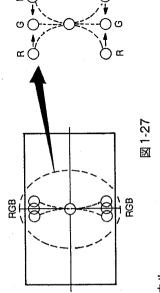
DC 基板の RV42, RV44, RV47, RV49 にて赤・緑・ 青のドットが重なるように調整する。(図1-25参照) വ

RV57	RV59		
RGB CC	RGB RGB		
RV52 (10)	RV54 (VV)		

図 1-26

DC基板のRV61 (Y.BOW) にて赤・緑・青のドット が重なるように調整する。(図1-27参照) 7





フロントパネル

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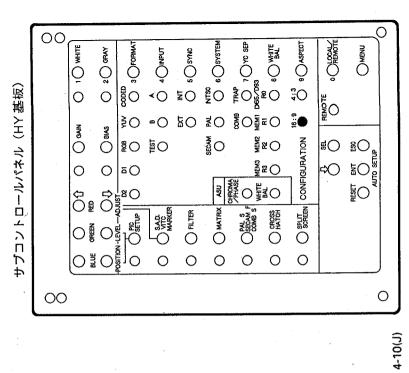
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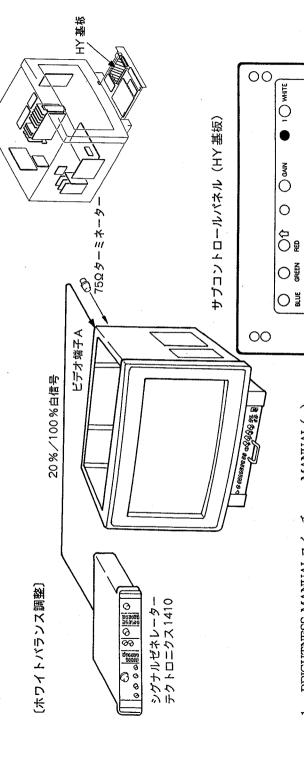
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CONTRAST MANUALスイッチ……MANUAL (ニ) BRIGHTNESS MANUALスイッチ……MANUAL (ユ)

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- BRIGH およびCONTRAST つまみを回し,PRESET MENUにて100になるように調整する。調整後, જાં
- CONTRAST およびBRIGHTのMANUAL スイッチを OFF にする。 က
- ビデオ端子 A に 20 %白信号を入力する。 4. 7.
- る。カラーアナライザでホワイトバランスを調整し,輝 を回し, 輝度が1.8cd/m² (nit) になるように調整す HY 基板の BIAS VR (S21:赤, S23:緑, S32:青) 度計で1.8cd/m² (nit) になることを確認する。
- ビデオ端子 A に 100%白信号を入力する。

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9 ASPECT

... <u>....</u> <u>....</u>

CONFIGURATION

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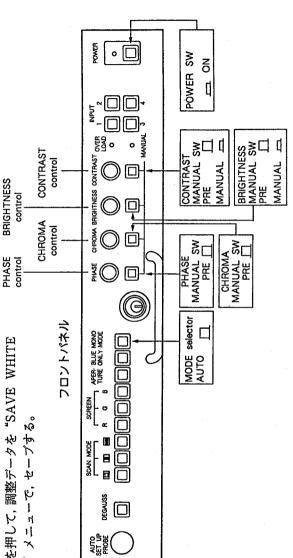
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- になな ンスを調整し,輝度計で $68cd/m^2$  (nit) になることを HY基板のGAIN VR (S20:赤, S22:緑, S31:青) るように調整する。カラーアナライザでホワイトバラ HIGHLIGHTの輝度が68cd/m² (nit) 確認する。 を回し、 6.
  - 必要なら, ステップ4. ~8. の手順を繰り返す。
  - ENT ボタンを押して, 調整データを 11 BALANCE" ထံ တံ



下記の部品(回路図上の国印)を交換する場合には以下 (**K**R52, R53) + Bプロテクター の確認をすること。

GB 基板 ...... D5, D6, D7, D8, Q3, Q4, Q5, R4, R5, ☐GA 基板 ……Q13, Q14, R52, R53

この確認にはデジタルマルチメーターを使用する。 GA 基板の TP2 にデジタルマルチメーターを接続する。 R19, R20, R21, R22

カラーバー信号を入力し, CONTRAST VRと BRIGHTNESS VRをPRESET位置にする。 (MANUAL SW OUT П)

GA 基板の R55 をショートする。

GA 基板の TP4 と TP3 (GND) 間に 100kの 可変抵 抗を接続する。 ഗ ന

100kの可変抵抗を回して,抵抗値を最大値から減少さ せ,+182.0V~+216.0Vで0Vに急に落ちることを デジタルマルチメーターで確認する。

4. を満足しない場合, R52, R53の抵抗値を選別し 規格を満足させる。 က်

R55を元通りにする。

**TP2の電圧が+150.0V±1.0Vであることを確認す** 6. nultimeter

digita!

+ B MAX確認 (MR67, R68) 下記の部品 (回路図上の国印) を交換する場合には以下

4

GA 基板の TP2 にデジタルマルチメーターを接続する。 GGA 基板 ……C59, IC3, R67, R68, R78, RV2 この確認にはデジタルマルチメーターを使用する。 の確認をすること。

1. カラーバー信号を入力し, CONTRAST VRと BRIGHTNESS VRをPRESET位置にする。 (MANUAL SW OUT D)

RV2の可変抵抗を時計方向いっぱいに回した時 + 165.0V ± 13.0V であることをデジタルマルチメー જાં

もし, 規格を満足しない場合は, R67, R68の抵抗値 を選別し規格を満足させる。 က်

確認後, GA 基板のRV2を調整して+150.0V±1.0V であることをデジタルマルチメーターで確認する。 4.

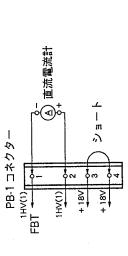
G 0 TP2 +150V 00 ٥

下記の部品 (回路図上の国印)を交換する場合には,以下 (KR222) ビーム電流プロテクター1の確認 の確認をすること。

R213, R214, R220, R221, R222, R223, R201, ☑PA 基板……D205, D206, D215, IC2, R224, R242

PB基板 ......FBT, R1, R2, R5

PB-1コネクターの①ピンと②ピン間に直流電流計を 接続し、 ③ピンと④ピンをジャンパードショートする。 PB 基板の PB-1 コネクターを抜く。



PA 基板の TP2 と TP4 (GND) にデジタルマルチメ က

OPERATE/SET UPセレクターをWHITEにする) 内蔵の全白信号にする。(HB 基板の WHITE 但しFree runでは行わないこと。 4

ဖ TP2の電圧が32.5V <sup>+ 1.0V</sup> であることをデジタルマル チメーターで確認する。

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~ ∞ 9 以上の場合, PA 基板のR222に1MΩ 1/4Wの抵抗 (金 属被膜)をマウントする。(通常R222はマウントされ TP2の電圧が $32.5V_{-1.5V}^{+1.0V}$ の範囲にあり, かっ $32.5V_{-1.5V}^{-1.5V}$ 

属被膜)をマウントする。(通常R239はマウントされ

BI 基板のC1 をショートする。 BRIGHTNESS VR とCONTRAST VRを回して直流

PA 基板の R213 をショートする。

電流計の値が2.20mA ± 0.35mA で画面が消えること

ジャンパー, 直流電流計を外し, PB-1コネクターを差し

R213とC1 およびPB-1 コネクターを元に戻す。

10. 11. 12. BRIGHTNESS VRとCONTRAST VRを最大にし,

ABLが動作することを確認する。

以上の場合, bA 基板のR239に1MΩ 1/4Wの抵抗 (金

TP3の電圧が $32.5 \mathrm{V}^{+1.0 \mathrm{V}}_{-1.5 \mathrm{V}}$ の範囲にあり, かつ $32.5 \mathrm{V}$ 

 $^{+\,1.0V}_{-\,1.5V}$ であることを確認する。

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OPERATE/SET UPセレクターをWHITEにする)

但しFree runでは行わないこと。

内蔵の全白信号にする。(HB 基板の WHITE

4;

PA 基板の R231 をショートする。 たいない。)

BI 基板のCI をショートする。 **∵** ∞ 6

電流計の値が2.20mA±0.35mAで画面が消えること BRIGHTNESS VRとCONTRAST VRを回して直流 を確認する。

R231 と C1 を元に戻す。 10.

ジャンパー, 直流電流計を外し, PB-1コネクターを差し

ABLが動作することを確認する。(OVER LOADラン BRIGHTNESS VRとCONTRAST VRを最大にし、 12.

ammete 6 6 + 1 20 下記の部品 (回路図上の国印) を交換する場合には, 以下の ☑PA 基板 ········· D204, D216, IC3, R203, R204, R231,

ビーム電流プロテクター2の確認 (NR239)

確認をすること。

PB-1コネクターの①ピンと②ピン間に直流電流計を接 R232, R237, R238, R239, R240, R241

直流電流計 ショート PB-1 コネクタ HV(1) FBT 18 187

続し, ③ピンと④ピンをジャンパーでショートする。

c;

PB基板 .......R3, R4, R5, R6, FBT 1. PB 基板の PB-1 コネクターを抜く。

R247

PA 基板の TP3 と TP4 (GND) にデジタルマルチメー ターを接続する。 က

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4-13(J)

4-14(J)

- タルマルチメ PA 基板の TP2 と TP4 (GND) にデジ ターを接続する。 က
- HITEにする) Ø WHITE 内蔵の全白信号にする。(HB 基板 OPERATE/SET UPセレクターをW 但しFree runでは行わないこと。

- TP2の電圧が32.5V $^{+\,1.0V}_{-\,1.5V}$ であることをデジタルマル チメーターで確認する。 က်
- 以上の場合, PA基板のR222に1MQ 1/4Wの抵抗 (金 TP2の電圧が $32.5V_{-1.5V}^{+1.0V}$ の範囲にあり、かっ $32.5V_{-1.5V}^{-1.5V}$ マウントされ 属被膜) をマウントする。(通常R222 は ていない。)

6.

- PA 基板の R231 をショートする。
- BRIGHTNESS VRとCONTRAST VRを回して直流 電流計の値が2.20mA±0.35mAで画面が消えること BI 基板の CI をショートする。 を確認する。 ~ & 6

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R231 と C1 を元に戻す。 10.

- クターを差し 11. ジャンパー, 直流電流計を外し, PB-1コネ
- BRIGHTNESS VR と CONTRAST VR を最大にし、 ABLが動作することを確認する。(OVER LOADラン 12.

ビーム電流プロテクター2の確認 (MR239)

R232, R237, R238, R239,

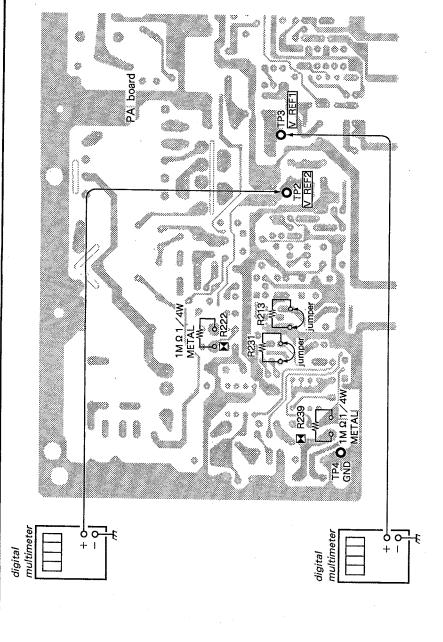
PB基板 ………R3, R4, R5, R6, FBT

R247

☑PA 基板 ········· D204, D216, IC3, R203,

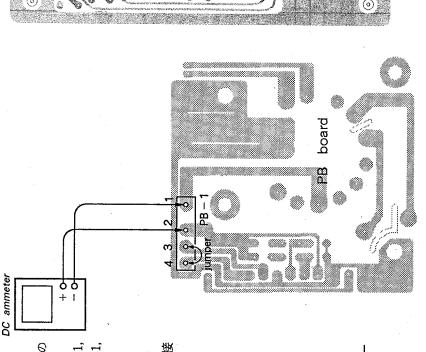
確認をすること。

- OPERATE/SET UPセレクターをWHITEにする) 内蔵の全白信号にする。(HB 基板の WHITE) 但しFree runでは行わないこと。 4
  - +1.0V TP3の電圧が32.5V <sub>-1.5V</sub> であることを確認する。 က်
- 以上の場合, PA基板のR239に1MΩ 1/4Wの抵抗 (金 属被膜)をマウントする。(通常R239はマウントされ TP3の電圧が32.5V <sup>+ 1.0V</sup> の範囲にあり, かつ 32.5V - 1.5V 6.
- PA 基板のR213をショートする。
  - BI 基板のCI をショートする。
- BRIGHTNESS VRとCONTRAST VRを回して直流 電流計の値が2.20mA ± 0.35mA で画面が消えること . 8 . 9
  - R213とC1およびPB-1コネクターを元に戻す。 10. 11.
- ジャンパー, 直流電流計を外し, PB-1コネクターを差し
  - BRIGHTNESS VRとCONTRAST VRを最大にし 12.



シート PB-1 コネクタ 1HV(1)7 1HV(1)

PA基板のTP3とTP4 (GND) にデジタ ターを接続する。 က



R204, R231, R240, R241, 下記の部品 (回路図上の国印) を交換する場合には,以下の PB 基板の PB-1 コネクターを抜く。
 PB-1 コネクターの①ピンと②ピン間に直流電流計を接

続し, ③ピンと④ピンをジャンパーだショートする。

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4-15(J)

以下の R228) 下記の部品(回路図上の国印)を交換する場合には 高電圧ホールドダウン調整および確認 (MR227, 調整をすること。 ☑DCT ブロック

☑PA 基板 ········· D205, D207, D215, IC2, R201, R213, R214, R225, R226, R227, R243, R245

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R228, R202,

က

## • 静電電圧計を使用する場合

- ブラウン管のアノードキャップに静電電圧計を接続し、 PA 基板の TP1 と TP4 (GND) にデジタルマルチメ
  - ソメバ ESH-校正されたもの。(例, シンガーの 静電電圧計:2×10°Ω以上の入力インピーダ 27X または ESH-23X)
    - デジタルマルチメーター:4桁以上のもの。 カラーバー信号を入力し, CONTRAST ď

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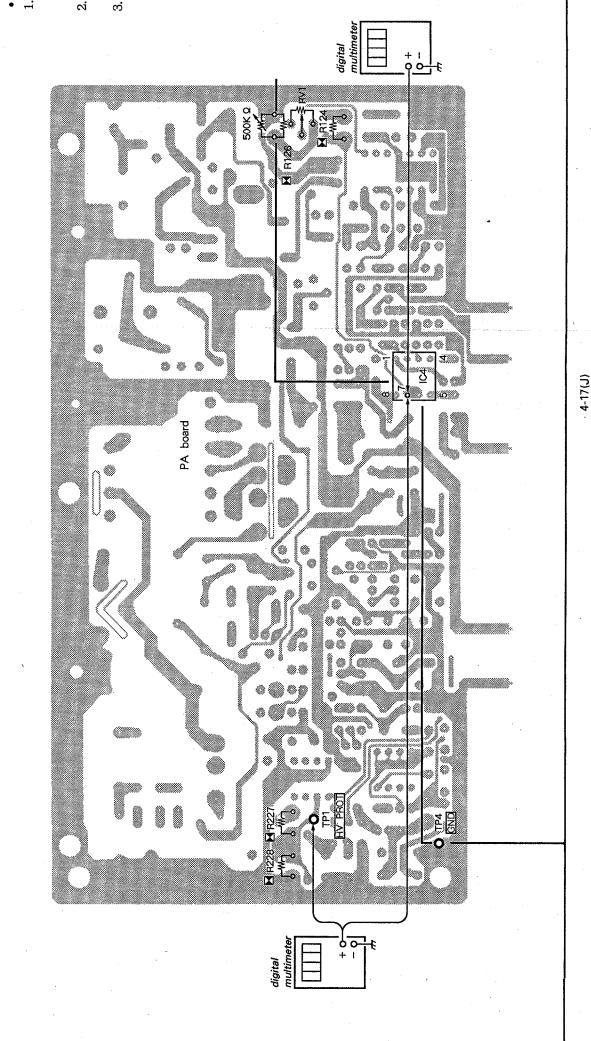
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- <del>ሴ</del> ብ BRIGHTNESS VRをPRESETの位置にする。 **TP1 の電圧が9.55V ± 0.13V になるようにR227** (MANUAL SW OUT 11)
  - び R228 の抵抗値を選別しマウントする。
- PA 基板の R126 に 500kΩ 可変抵抗を並列に接続する。 500kΩ 可変抵抗を最大値から徐々に減少させ 29.0kV ±1.0kVで急激に低下 (0V) することを静電電圧計で 4. 3.
- 500kg可変抵抗をR126より外し, 再度アノード電圧が 27.0kV ± 0.1kV であることを確認する。

6

(デジタルマルチメーターを使用する場合) 静電電圧計を使用しない場合

- PA基板のTP1とTP4 (GND), およびIC4のピンTP4 (GND) にデジタルマルチメーターを接続する。
  - カラーバー信号を入力し, CONTRAST VRと **TP1 の電圧が 9.40V ± 0.13V になるように R227 およ** BRIGHTNESS VRをPRESETの位置にする。
    - びR228の抵抗値を選別しマウントする。
- 500kΩ可変抵抗を最大値から徐々に減少させ, IC4億ピ PA基板のR126に500kΩ可変抵抗を並列に接続する。
  - **ンの電圧が9.40V ± 0.13V で画面が消えることを確認** က
    - 500kΩ 可変抵抗を R126 より外す。 6



4-16(J)

F記の部品(回路図上のIII)を交換する場合には以下の (MR124, R126) 高電圧レギュレーター確認 調整をすること。 **■**DCT ブロック

☑PA 基板………D216, IC1, IC4, R123, R124, R125, R126, R136, R137, R138, R203, R204,

静電電圧計を使わない場合, PA 基板の IC4のピンにデジタ ブラウン管のアノードキャップに静電電圧計を接続する。 以下の調整には、静電電圧計または同等品を使用する。 ルマルチメーターを接続する。 RV1

注意:2×10°Ω以上の入力インピーダンスに校正された静 電電圧計を使う。

• デジタルマルチメーターは4桁以上のものを 例:(株) シンガーのESH-27XまたはESH-23X。 使用。

# ● 静電電圧計を使用する場合

- カラーバー信号を入力し, CONTRAST VRと BRIGHTNESS VRをPRESET位置にする。 (MANUAL SW OUT [])
  - 静電電圧計で最大値が得られるように,PA 基板のRV1 を回す。(時計方向いっぱい) જાં
- その時静電電圧計の指示値が27.40kV±0.1kVである ことを確認する。 က

digital

500K p

PA board

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- もし3項を満足しない場合は, R124とR126の抵抗値
  - を選別し,再度2項と3項の確認を行う。 確認後,静電電圧計を使用し,RV1にて27.0kV±0.1kV に調整する。 ည
- 静電電圧計を使用しない場合

(デジタルマルチメーターを使用する場合)

- カラーバー信号を入力し, CONTRAST VR と BRIGHTNESS VRをPRESET位置にする。 (MANUAL SW OUT []) જાં
  - デジタルマルチメーターをPA 基板のIC4のピンと TP4 (GND) に接続する。
    - IC4のピンの電圧が 8.75V ± 0.1V となるように R124 (RV1がメカニカルセンター付近でこの条件を満足すれ PA 基板の RV1 をメカニカルセンターにする。 およびR126の抵抗値を選別しマウントする。 ばよい。) က

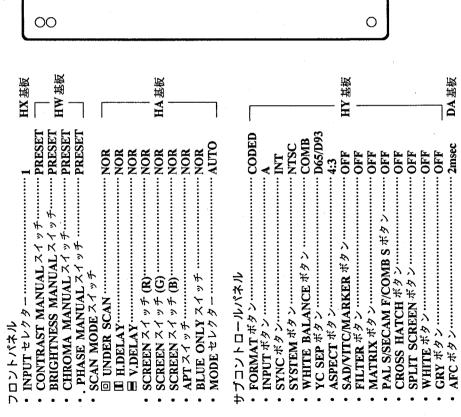
4-17(J)

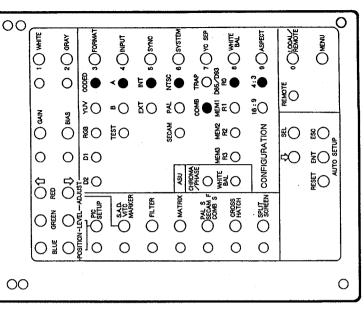
#### 4-7. 電気調整

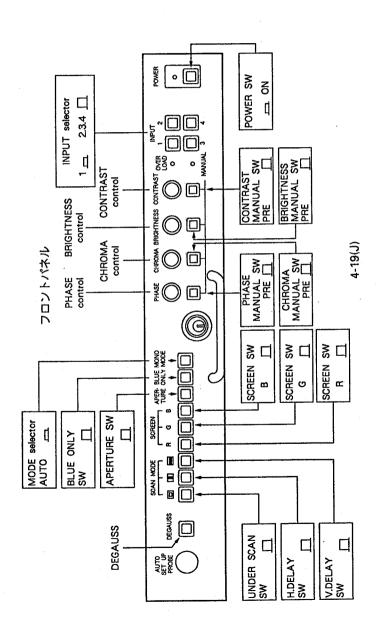
次ページ以降の電気調整でスイッチ, コントロールの SWの設定条件等で特に指定のない場合, 接続方法, スイッチの設定条件は次のとおりとする。

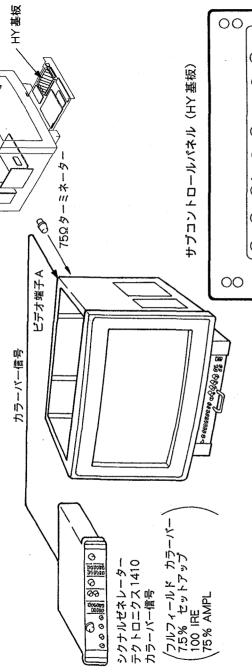
トロールパネル (HY基板)

ブロン





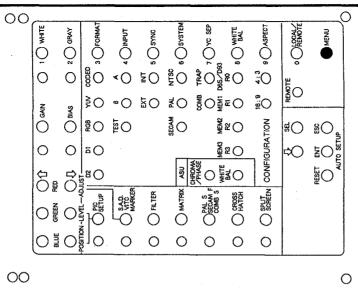


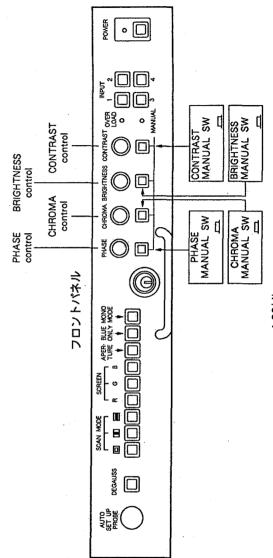


- MENUボタン(サブコントロールパネル)を押し、 PRESETメニューを選択する。
  - 2. CONTRAST, BRIGHT, CHROMA, PHASE, MANUAL スイッチ (フロントパネル) を押す。

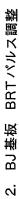
★大整麒、A |||||||||||

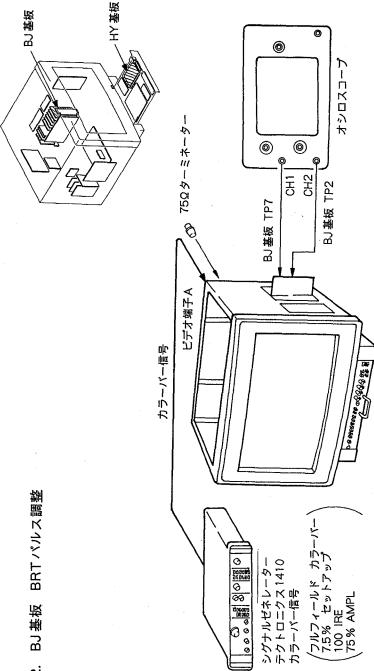
- 3. 画面の数値が100になるように各ボリュームにて調整
- 4. 調整後, データをセーブする。



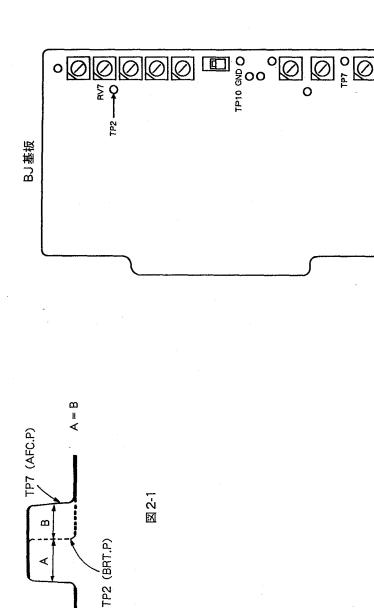


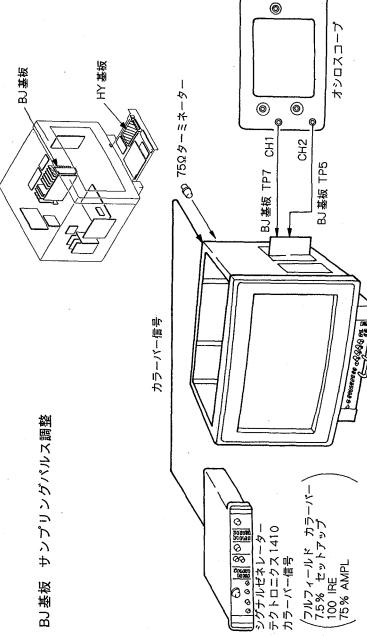
4-20(J)





- 本機のビデオ端子Aにカラーバー信号を入力する。 BJ基板のTP7にオシロスコープのCH1プローブを接続し、TP2にCH2プローブを接続する。 出力波形が図2-1になるようにRV7を調整する。 ₽ %
- က





本機のビデオ端子 A にカラーバー信号を入力する。

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BJ 基板の TP7 にオシロスコープのCH1 プローブを接続し、TP5 に CH2 プローブを接続する。 i. 2.

★大整體、4

オシロスコープの出力波形が図2-2になるように KA5を調整する。 က

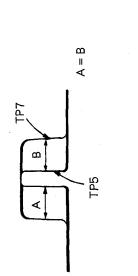
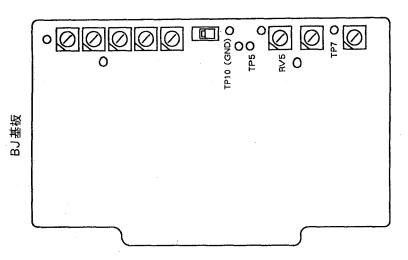
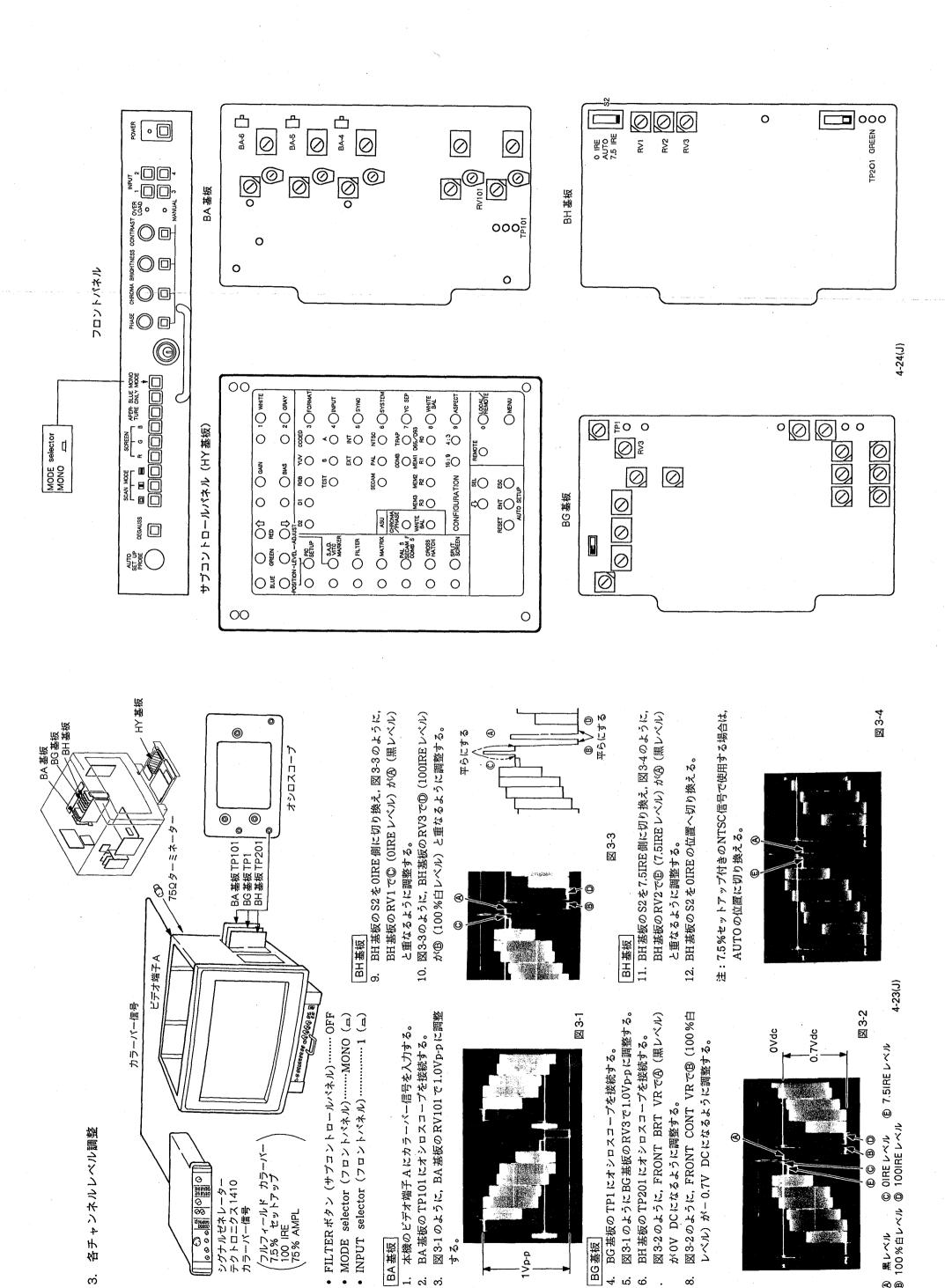


図 2-2





各チャンネルレベル調整

က

(フルフィールド カラーバー) 7.5% セットアップ 100 IRE 7.5% AMPL

BA 基板

シグナルゼネレーター テクトロニクス 1410 カラーバー信号

がOV DCになるように調整する。

∞

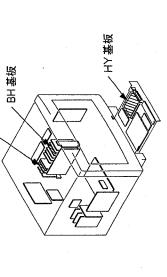
BG 基板

က် 6 **@** 

(あ) 黒フベル(の) OIRE フベル(の) 100 N目 DOIRE フベル

| BA 基板| |13. 本機のRGB端子 (QB 基板) にカラーバー信号を入力 L, COMP VIDEO端子 (QA基板) にEXT COM SYNC信号を入力する。

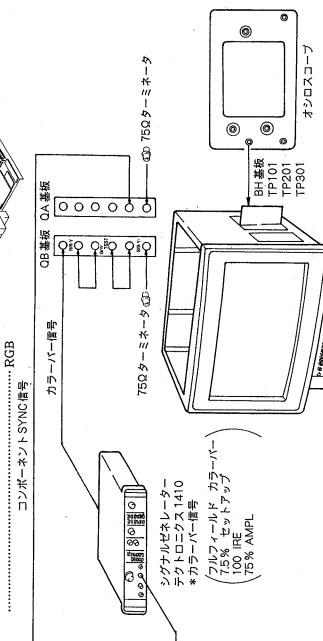
- SYNC ボタン (サブコントロールパネル)…… EX'
  - FORMATボタン (サブコントロールパネル)



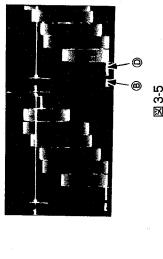
BA基板

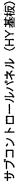
0

BH基板



- 14. BH 基板の TP101 にオシロスコープを接続する。
- 15. 図3-5のように, BA 基板のRV401で① (100IRE レベ ル)が⑩ (100%白レベル)と重なるように調整する。
- BH 基板の TP201 にオシロスコープを接続する。 16.
- 17. 図3-5のように, BA 基板のRV501で@ (100IRE レベ ル)が働(100%白レベル)と重なるように調整する。
- 18. BH 基板の TP301 にオンコヘー 19. 図3-5のように, BA 基板のRV601で⑥ (100IRE レベル) が⑧ (100%白レベル) と重なるように調整する。





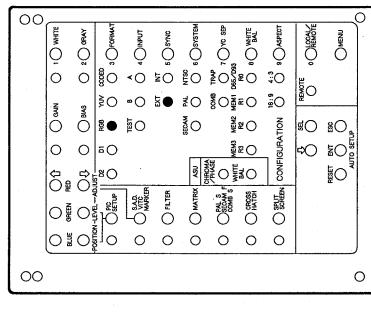
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TP101 RED O TP201 GREN O TP301 BLUE O

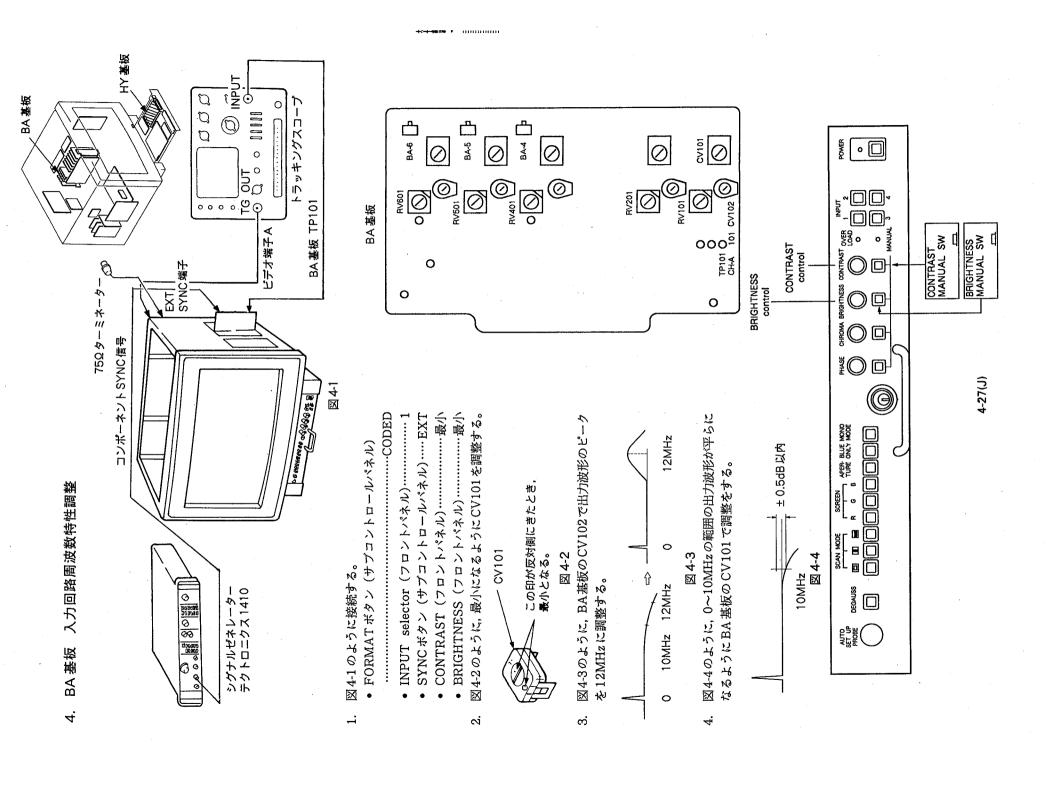
0



フロントパネル

SOAN WOOF SOREEN AFER BULK MOOF لے DEGALUSS

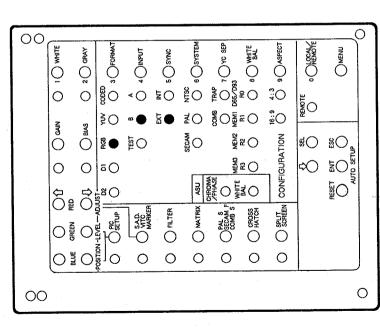
4-25(J)

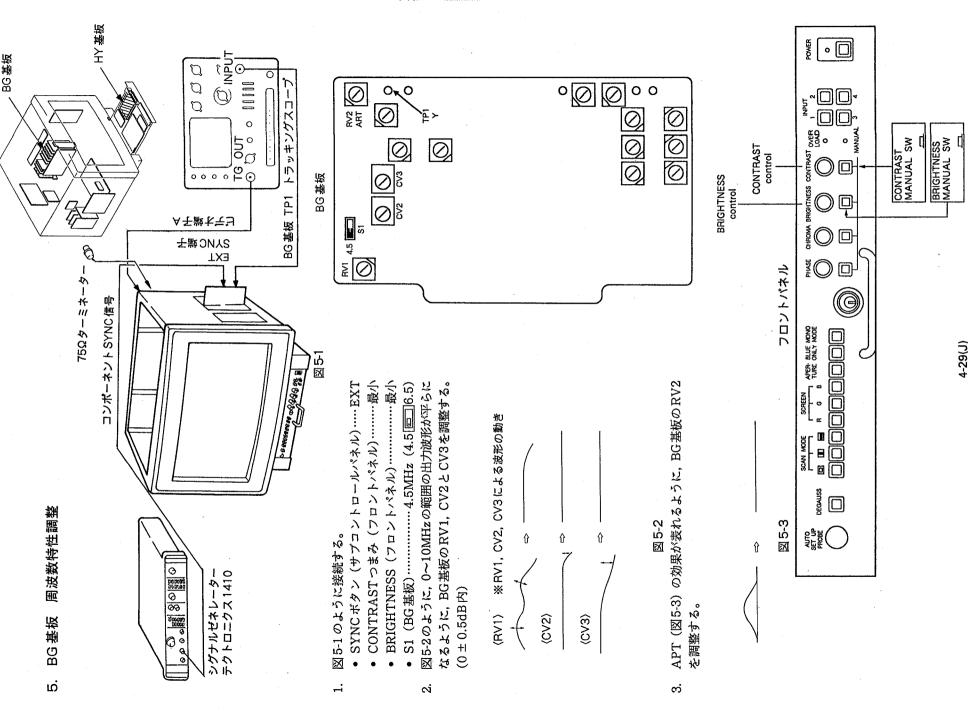


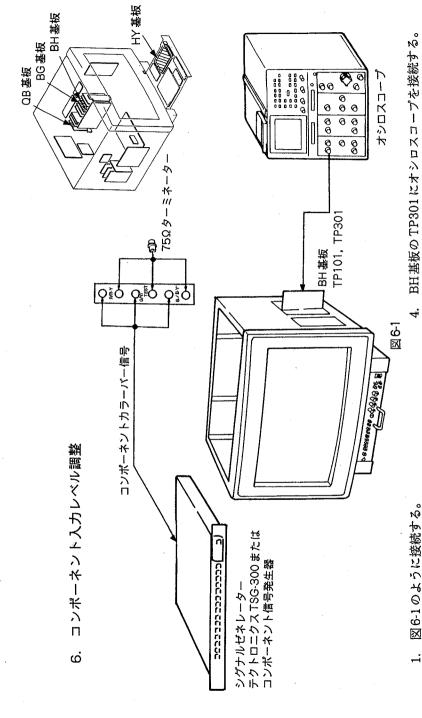
5. 同様に, 下記の状態での調整を行う。

_						
	TP CV (BA基板)		CV201, CV202	CV401, CV402	CV501, CV502	CV601, CV602
			TP201	TP401	TP501	TP601
	FORMAT ボタン	(小ペネル)	CODED	RGB	RGB	RGB
	INPUT ボタン	(サブコントロールパネル)	В			
	INPUT		В	R/R-Y	G/Y/TEST	B/B-Y

サブコントロールパネル (HY 基板)



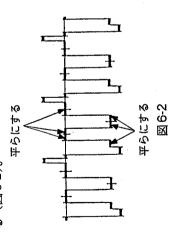




- 図6-1のように接続する。
- ΛΩ**Τ**..... FORMATボタン (サブコントロールパネル)
- BH 基板の TP101 にオシロスコープを接続する。 න් ස

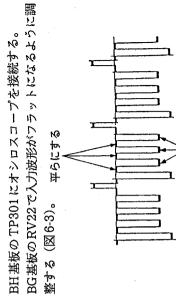
**太大整髃 .4** 

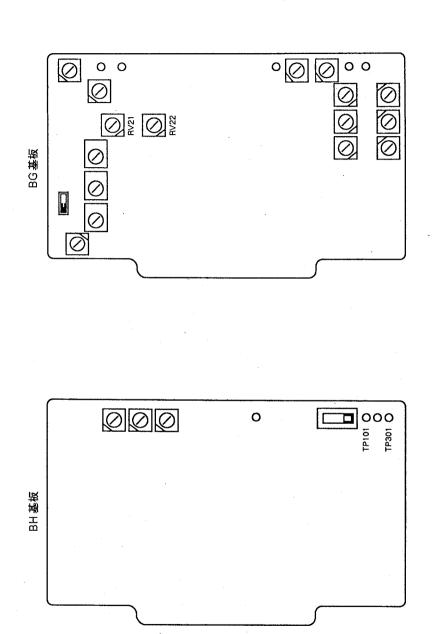
BG 基板の RV21 で入力波形がフラットになるように調 整する (図6-2)。



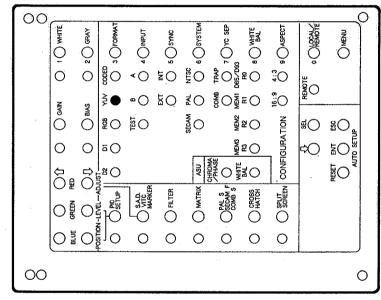
平のにする

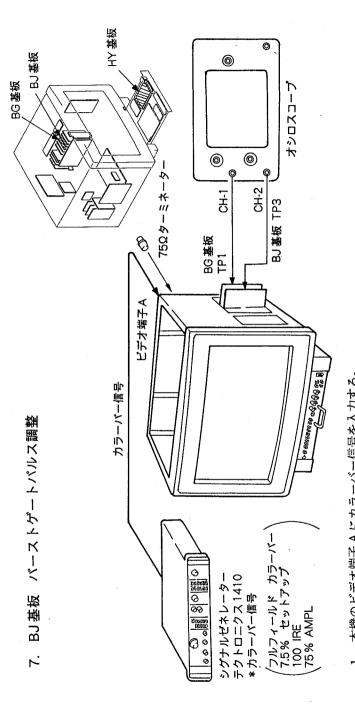
**图**6-3

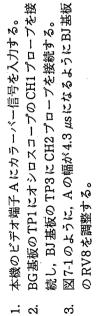




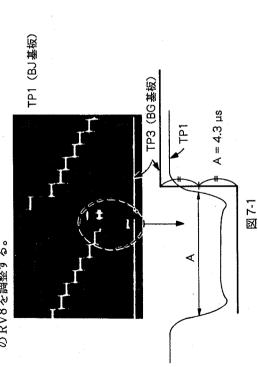
サブコントロールパネル (HY 基板)







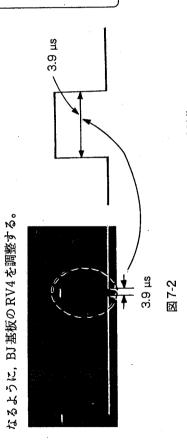
BJ基板

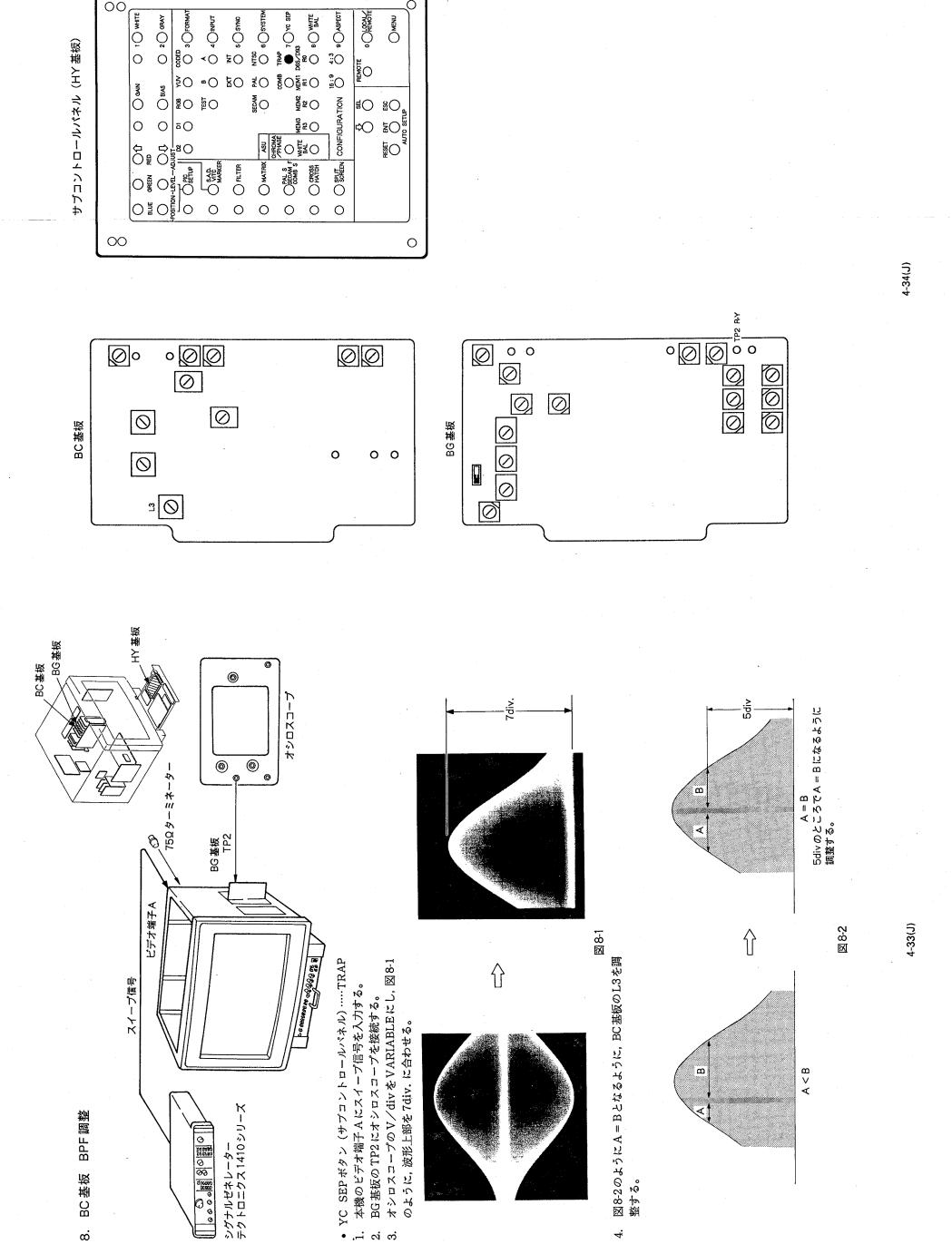


\* A (SYNCの立ち下がりからB.G.P (バーストゲートパ ルス)の立ち上がり) を, 4.3 us に調整する。

図7-2のように, バーストゲートパルスの幅が3.9 μsに

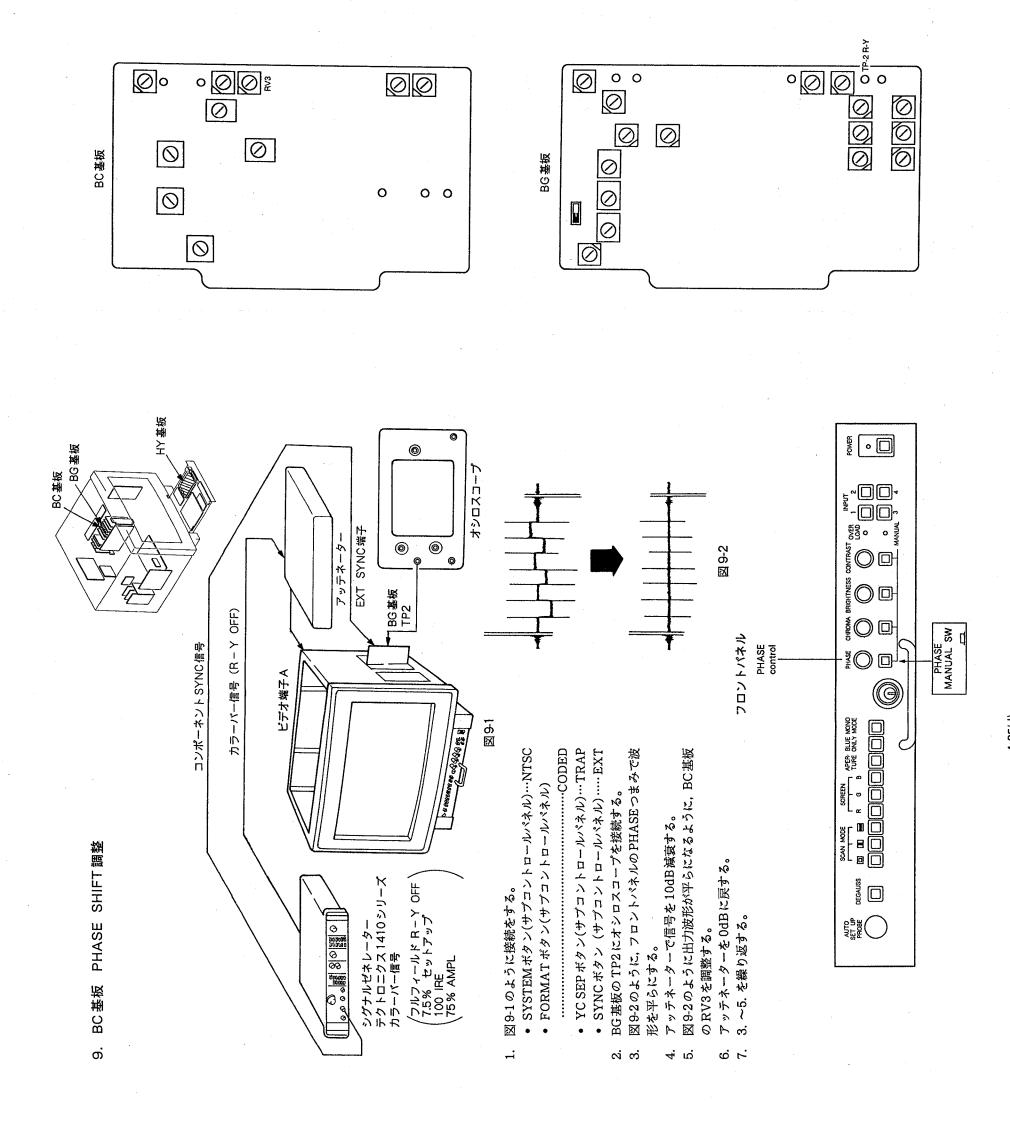
4.





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AUTO SETUP

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サブコントロールパネル (HY 基板)

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O FILTER

0

0

O SPOSS

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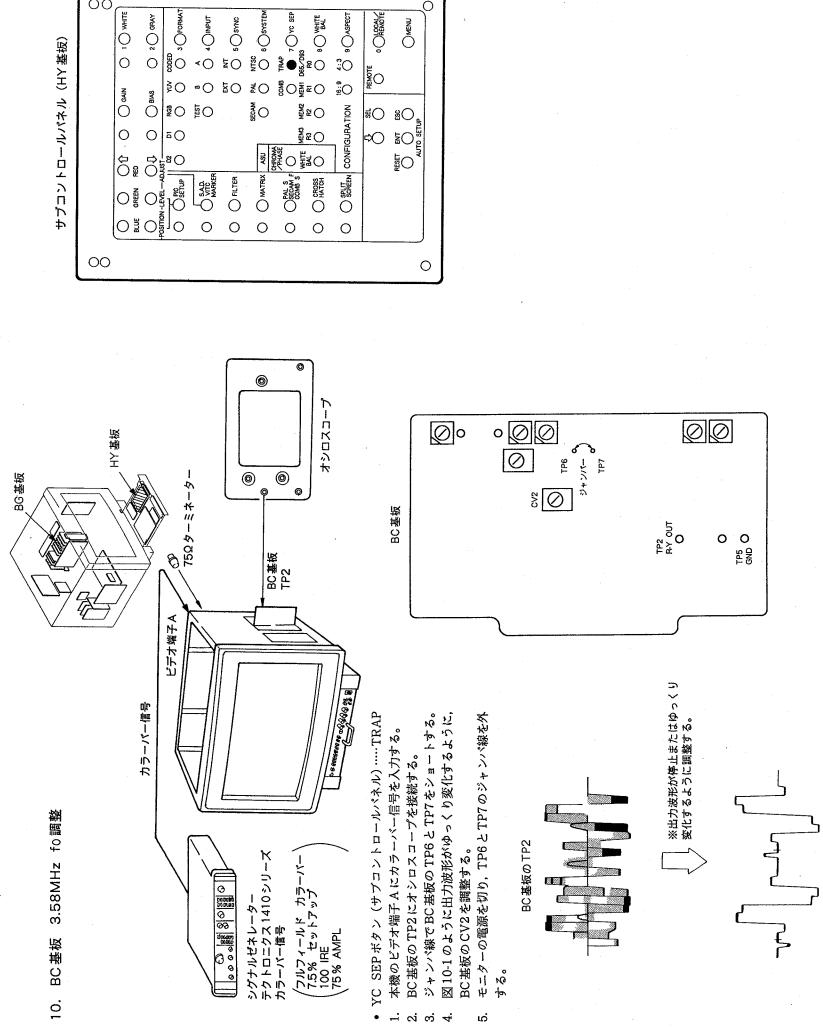
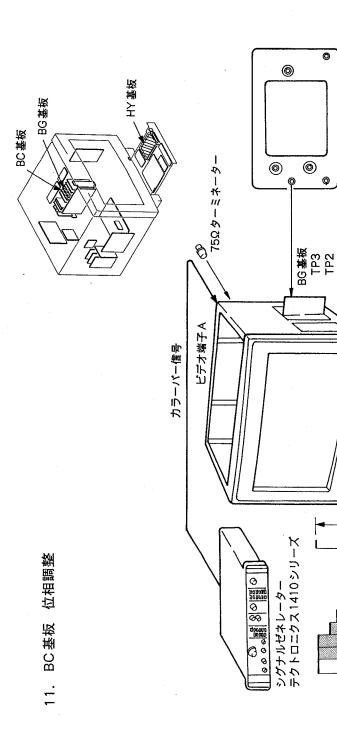


図10-1 0, w 4. က်



シグナルゼネレーターからB-Y信号をオンにして, R-Y 信号をオフにする。そして出力波形が平らになるよう

6

にBC基板のCV1を調整する。(図11-3参照)

3. ~6. までを繰り返する。

7

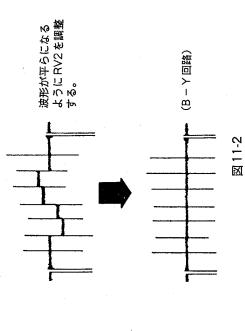
図 1-1 YC SEPボタン (サブコントロールパネル) ……TRAP1. 図11-1のように接続する。

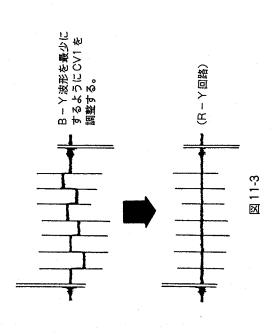
フルフィールドモード

- モニターの電源を入れる。



- て、シグナルゼネレーターのB Y信号をオフにする。 オシロスコープの感度を20mV/Divにして、出力被形 オシロスコープのプローブをBG基板のTP3に接続し က
  - が同一レベルになるように, BC基板のRV2を調整する。 (図11-2参照) 4.

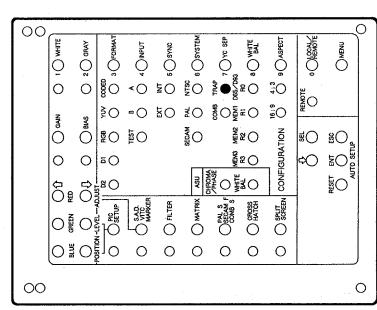


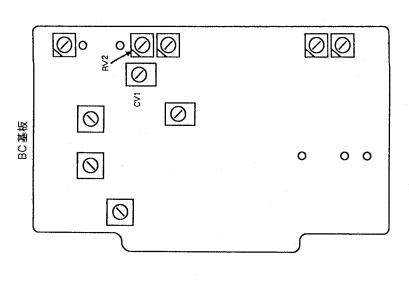


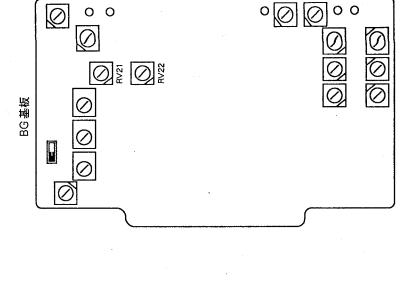
オシロスコーブ

17 (752)

サブコントロールパネル (HY 基板)



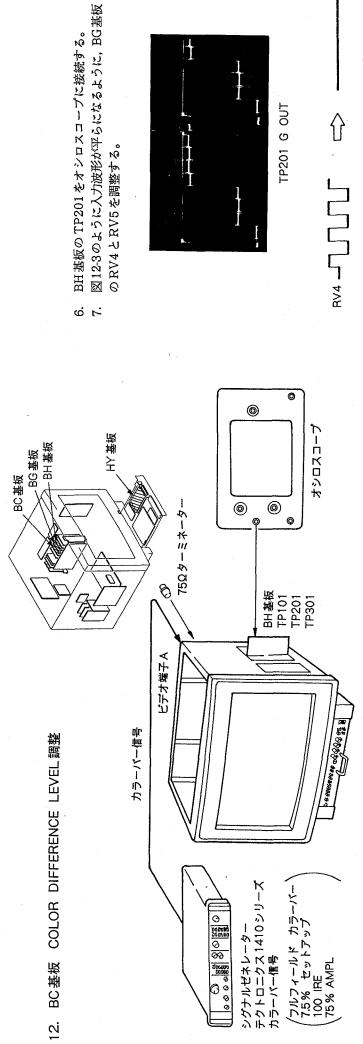






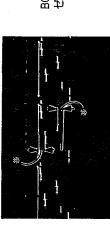
TP101 RED O TP201 GREEN O TP301 BLUE O

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• YC SEPボタン (サブコントロールパネル) ·····TRAP

- 本機のビデオ端子Aにカラーバー信号を入力する。
   BH 基板のTP101にオシロスゴープを接続する。
   出力波形が図12-1で示す※の間隔が無くなるように
- 出力波形が図12-1で示す※の間隔が無くなるように, KV4を調整する。



BC基板のRV4で※印のレベルがそれぞれ ゼロになるように調整する。

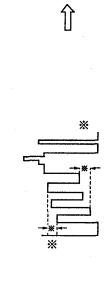
12-1 X BH 基板の TP301 にオシロスコープを接続する。

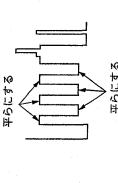
TP101 R OUT

出力波形が図12-2のようになるように, BC基板のRV5

を調整する。

4. 7.

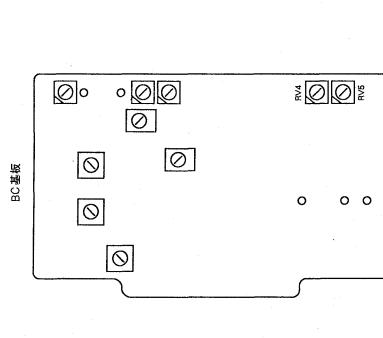




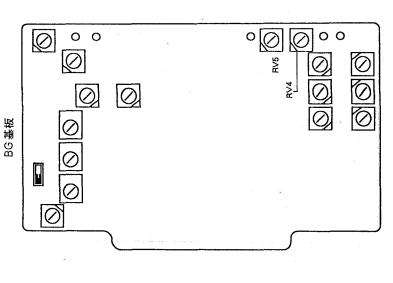
12-2

図

TP301 B OUT



BH基板

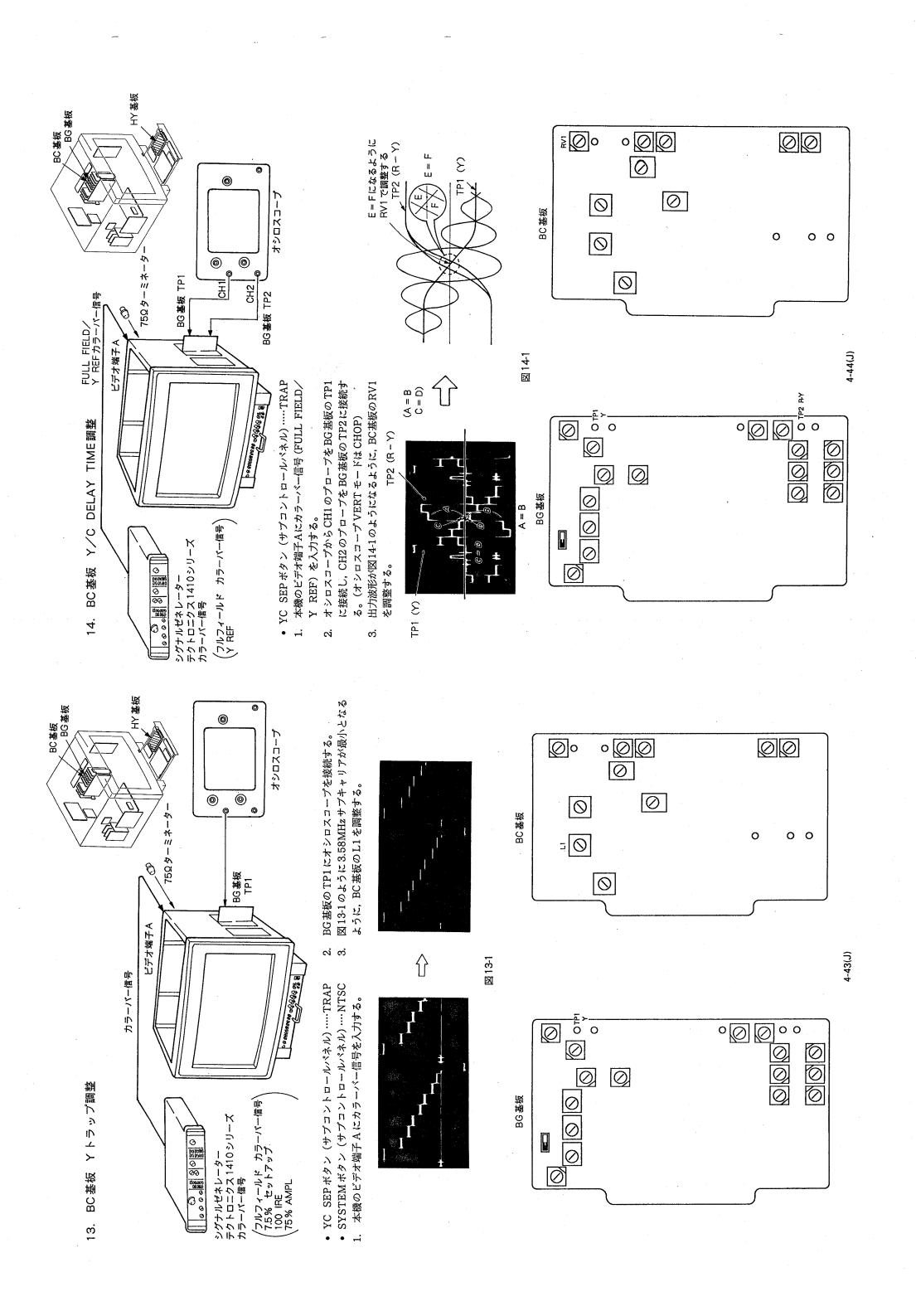


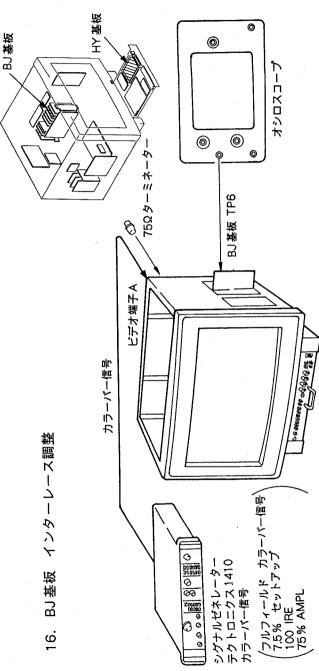
TP201 G OUT

Û  $\bigcirc$ 図 12-3

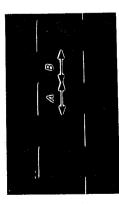
RV5

4-41())





- YC SEPボタン (サブコントロールパネル) ……TRAP 1. 本機のビデオ端子 Δ ビナニ
  - - BJ 基板の TP6 にオシロスコープを接続する。
- オシロスコープの出力波形が図16-1になるように, RV6 を調整する。 03 to



A = B

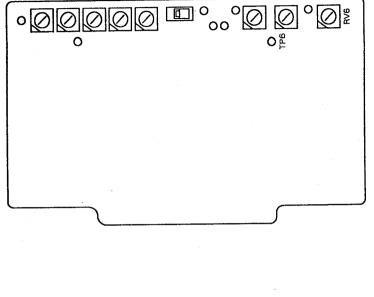
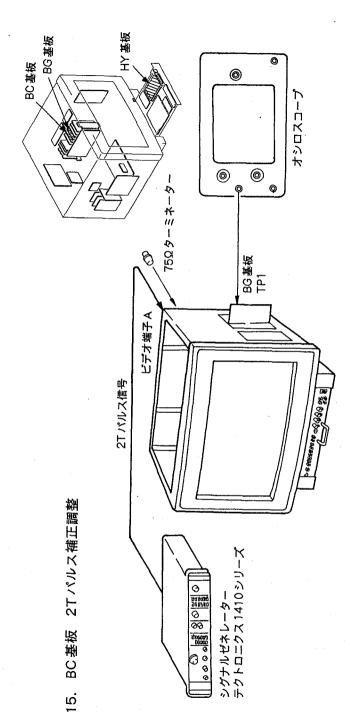
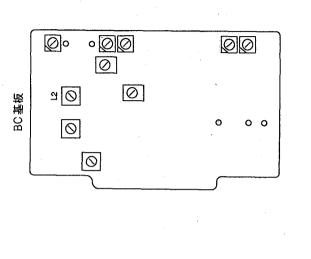


図16-1

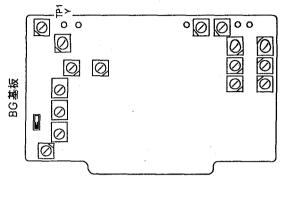


- YC SEPボタン (サブコントロールパネル) …..TRAP
  - 本機のビデオ端子Aに2Tパルス信号を入力する。 BG基板のTP1にオシロスコープを接続する。
- 図15-1のようにAとBが同じにあるように, BC基板の લું છે
- のように、波形バランスが著しくくずれないことを確認 L2で調整する。 入力信号を2TパルスからTパルスへ切り換えて, 図15-1 \$ 20 4



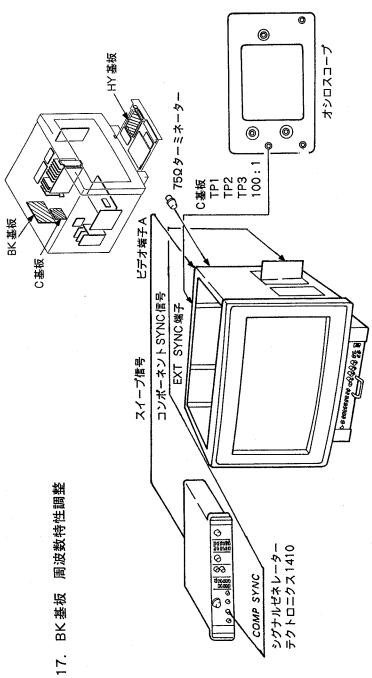
A = Bになるように L2で調整する。

27パルス









- 本機のビデオ端子 A にスイープ信号を入力し, EXT <del>.</del>;
  - YC SEPボタン (サブコントロールパネル) SYNC端子にCOMP SYNC信号を入力する。
- .....TRAP • SYNC ボタン (サブコントロールパネル)……EXT
- MODE slector (フロントパネル)…MONO (エ)
- FILTERボタン (サブコントロールパネル)・OFF
  - C基板の TP1 にオシロスコープを接続する。 7 - 7:100:1જાં
- 図17-1のように出力波形の0~10MHzの範囲が平らに なるように,BK 基板のCV101とCV102を調整する。 က
- C基板の TP2 にオシロスコープを接続する。

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CONFIGURATION

Scheen

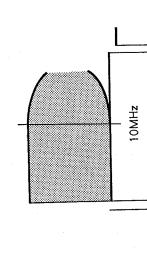
O RATER

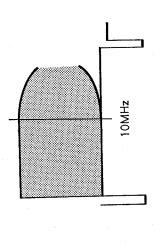
0

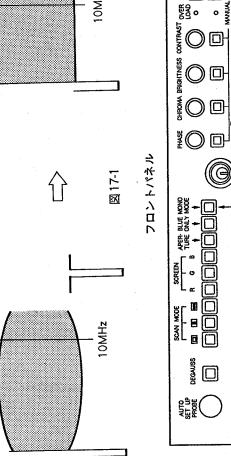
A SECALA SECALA

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- 図17-1のように出力波形の0~10MHzの範囲が平らに なるように, BK 基板の CV201 と CV202 を調整する。 ĸ.
  - C基板の TP3 にオシロスコープを接続する。 図 17-1 のように出力波形の 0~10MHz の範囲が平ら になるように, BK 基板のCV301 とCV302を調整する。 6.

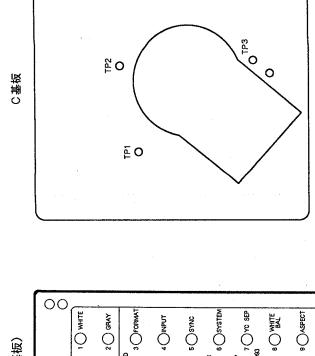






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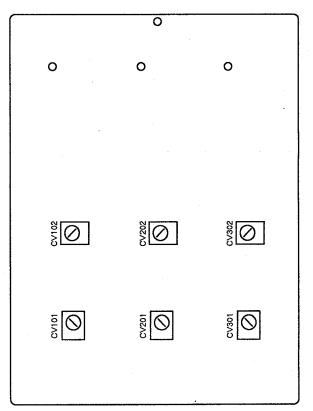
**₩** 

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STO E C

サブコントロールパネル (HY 基板)

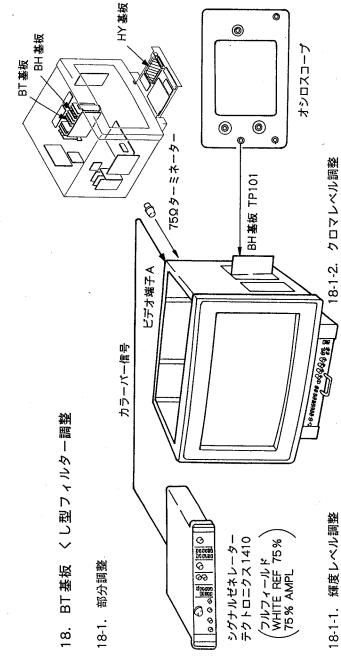
BK 基板



4-47(J)

MODE selector MONO





- 本機のビデオ端子Aにカラーバー信号を入力する。
   サブコントロールパネルのVC crr バー・
- サブコントロールペネルのYC SEPボタンをTRAPに
  - オシロスコープをBH 基板の TP101 (R・OUT) へ 続する。(DC0.1V/div:H) က
- オシロスコープのポジションを回し, 図18-1のAのj 分(白)をオシロスコープのセンターに合わせる。 4.
- サブコントロールパネルのYC SEPボタンをCOMB ည်
- サブコントロールパネルのPAL S/SECAM F/COM SボタンをONにする。 ø.
- BT 基板の KV3(輝度レベル)にて, 図 18-1 の A の部 分(白)をオシロスコープのセンターに合わせる。
- サブコントロールペネルのYC SEPボタンをTRAPに 本機のビデオ端子Aにカラーバー信号を入力する。
- オシロスコープのポジションを回し, 図18-1のAの部

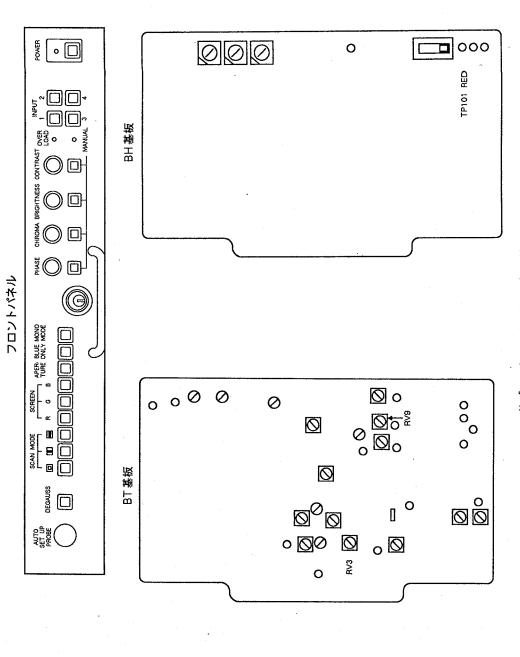
オシロスコープをBH 基板の TP101 へ接続する。

**\$** 2°

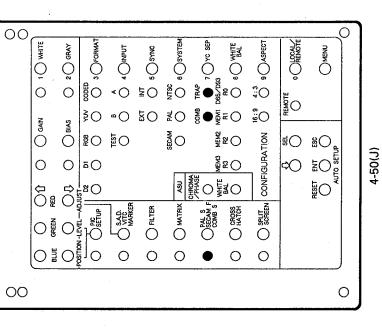
- サブコントロールペネルのYC SEPボタンをCOMBに 分(白)をオシロスコープのセンターに合わせる。
- サブコントロールペネルのPAL S/SECAM F/COMB SボタンをONにする。 <del>ф</del>20°
  - BT 基板の KV8 (クロマレベル) にて, 図18-1の Bの 部分(赤)をオンロスコ



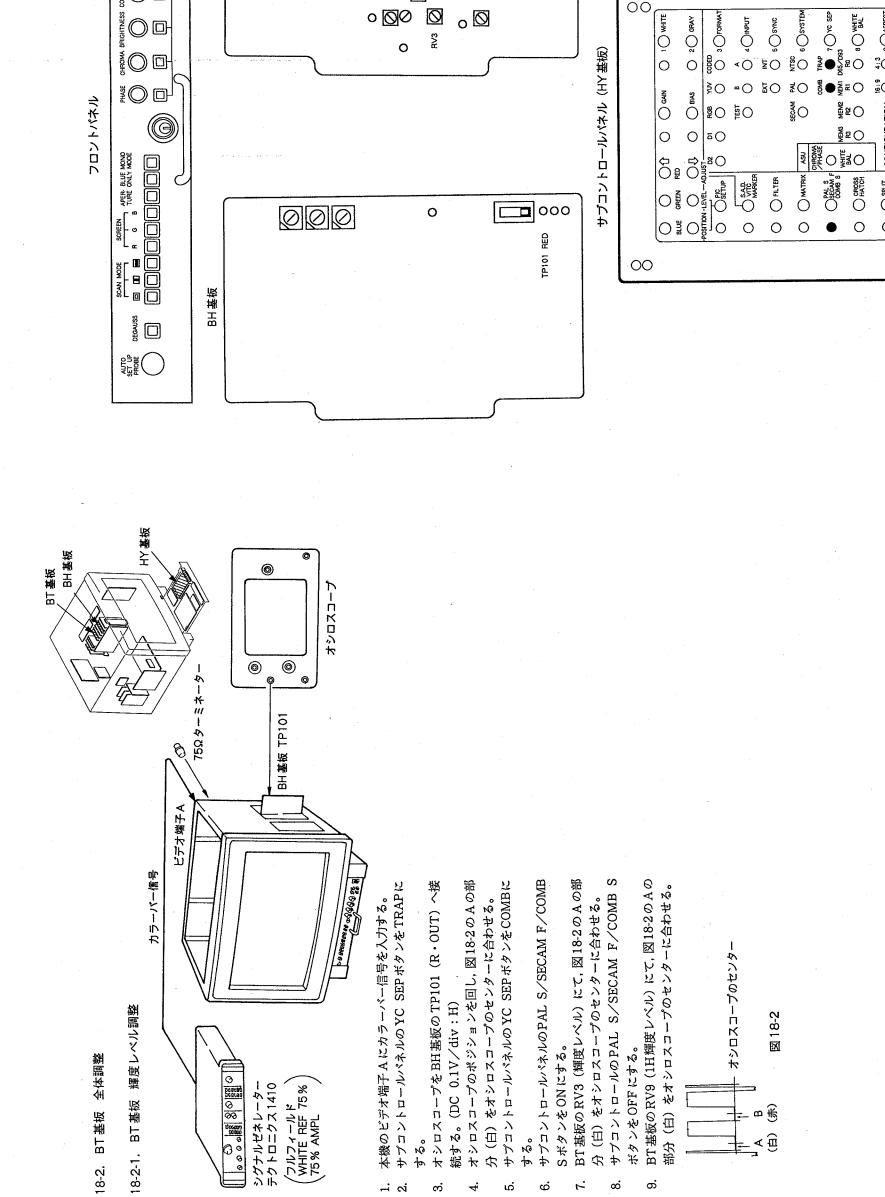
注:下記の部品は調整が困難なので, 絶対に回さないこと。 FL1, FL2, FL3, DL3, DL5, DL6, DL8



サブコントロールパネル(HY 基板)



4-49(J)



(フルフィールド (WHITE REF 75%) 75% AMPL

.: %

シグナルゼネレーター テクトロニクス 1410

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BT 基板

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RESET ENT ESC

AUTO SETUP

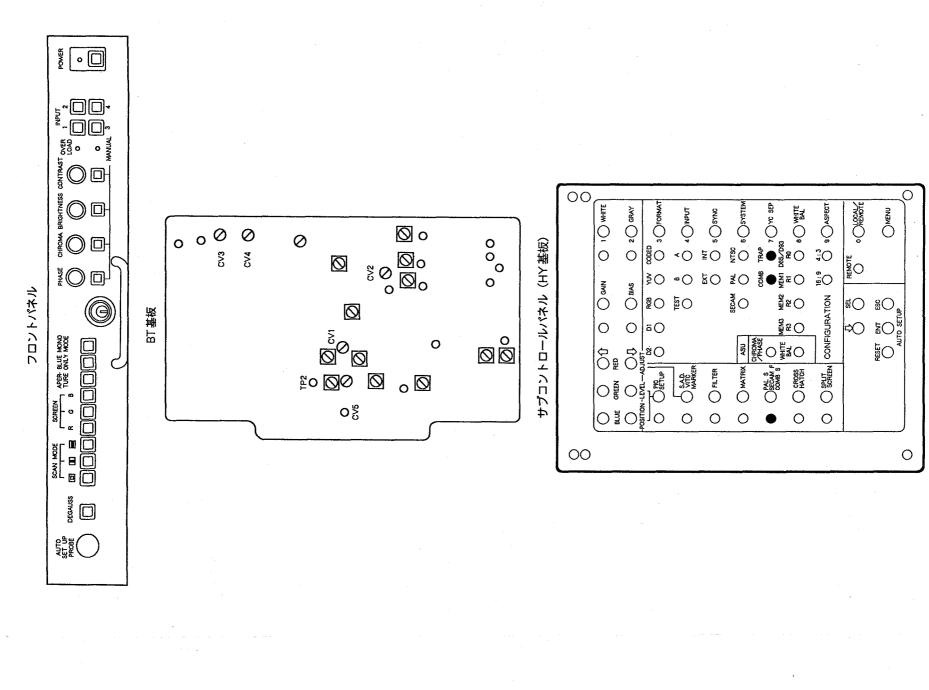
0

4-52(J)

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 $\Rightarrow \bigcirc$ 





**⊠** 18-3

図 18-4

分

BT 基板 // BH 基板

オシロスコープ

サブコントロールパネルの YC SEPボタンをCOMBに

オシロスコープを BT 基板の TP2に接続する。

က

本機のビデオ端子Aへスイープ信号を入力する。

-: 8

サブコントロールパネルのPAL S/SECAM F/COMB

ĸ.

CV5を図18-3 (a) の位置に合わせる。

(AC 0.1V/div:V)

SボタンをONにする。 BT基板のCV1 (輝度周波数調整) にて, 周波数特性が 調整しきれない時は, CV5 (輝度周波数調整) を調整す

平坦になるように調整する。

6

サブコントロールパネルのPAL S/SECAM F/COMB

BT 基板の CV3 (クロック位相調整) と CV4 (クロッ

性が平坦になるように調整する。

ク位相調整)を図18-3 (b)の位置に合わせる。

10. CV3 にて図18-4のように調整する。

BT 基板のCV2 (1H 輝度周波数調整) にて, 周波数特

SボタンをOFFにする。

 もし、CV3にて調整できない場合は、CV3を図18-3(b) の位置に戻し、CV4にて調整する。

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BT 基板 TP2

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シグナルゼネレーター テクトロニクス1410

DOTOS O

アデオ雑子A

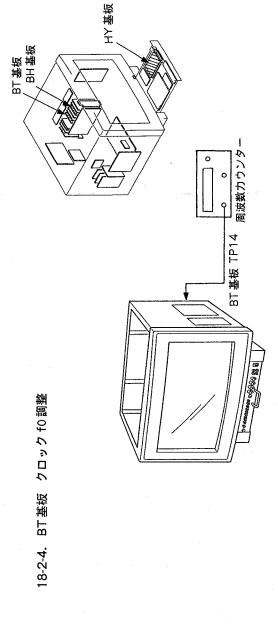
スイープ信号

BT基板 丫系周波数特性調整

18-2-2.

4-53(J)





MHzに調整する。

BT基板のCV6 (クロック周波数調整) にて, fo = 21.477 周波数カウンターを TP14 に接続する。 . .

1. 本機のビデオ端子Aにスイープ信号を入力する。

SボタンをONにする。

က



BT 基板の DL8 にて, 図 18-5 のように周波数特性が

オシロスコープを TP13 に接続する。

<u>۰</u> %

オシロスコープを TP12 に接続する。

က် တဲ

3.58MHzを中心として対称となるように調整する。

オシロスコープを TP3 に接続する。

9.

BT 基板の DL5 にて, 図 18-5 のように周波数特性が

0 0

TP14 O

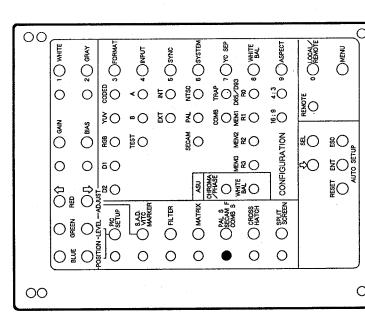
BT 基板

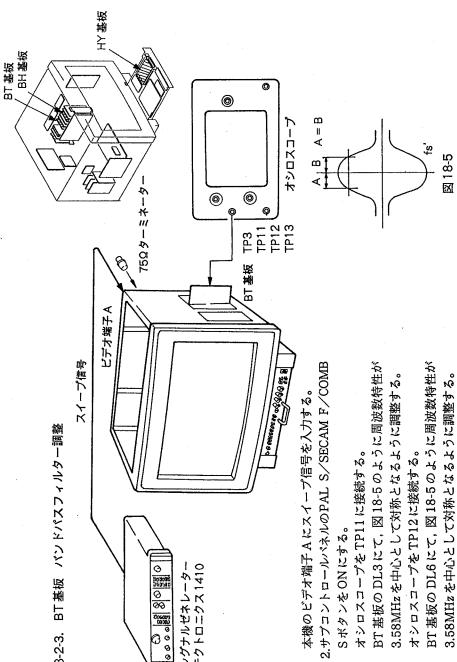
§ Ø

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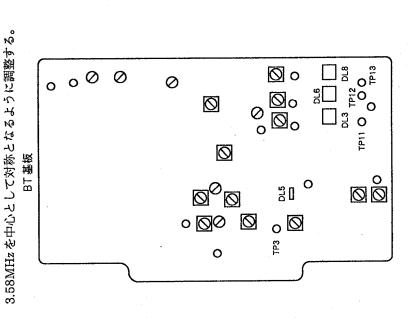


シグナルゼネレーター テクトロニクス 1410

Dogona Construction

18-2-3. BT基板 バンドパスフィルター調整

サブコントロールパネル (HY 基板)



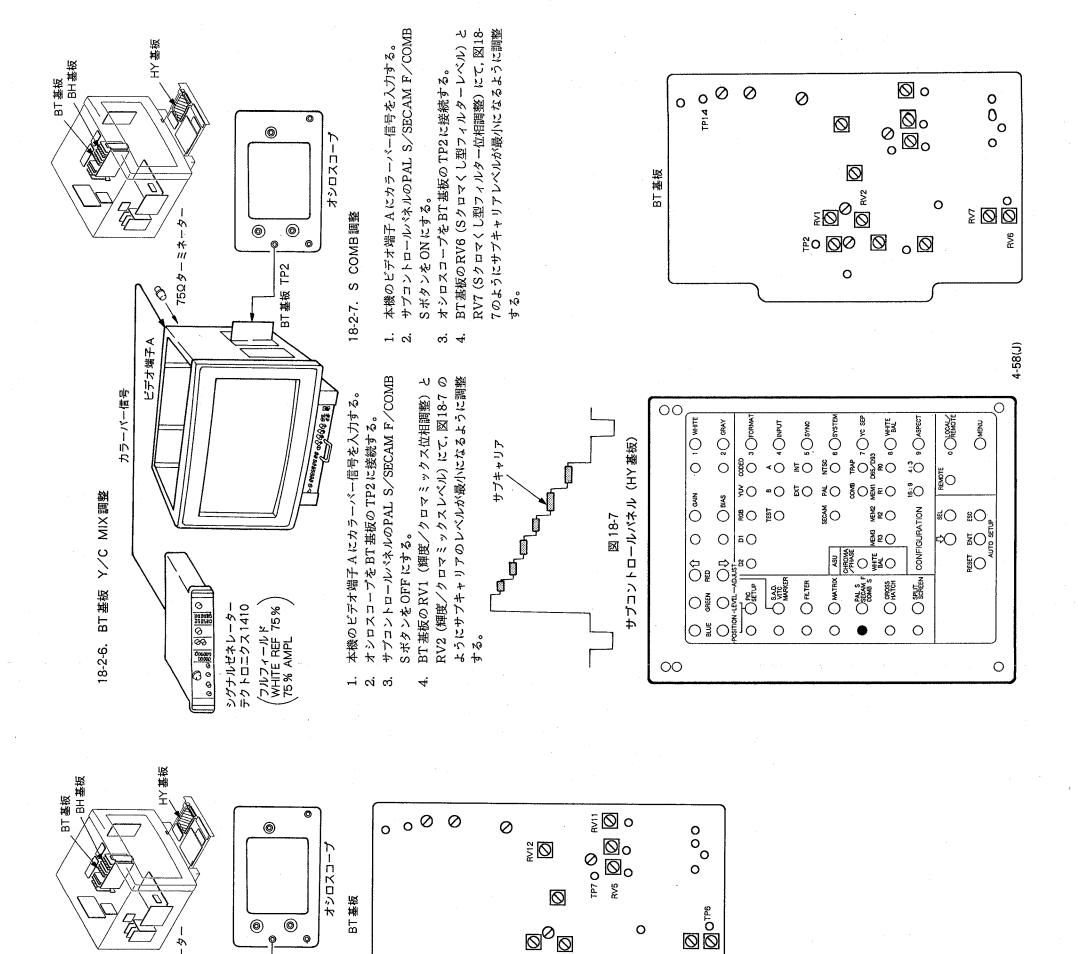
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BT 基板の RV5 (0H/1Hミックスレベル) と RV1( (OH/1Hミックス位相調整) にて, 図18-6の部分のL

က

オシロスコープを TP6 に接続し, 信号の反転した部分

本機のビデオ端子Aにカラーバー信号 (REVERSE)

入力する。

Ŕ

BT 基板のRV12 (1H/2Hミックス位相調整) とRV1∶

オシロスコープをTP7に接続する。 ベルが最小になるように調整する。

4. 73.

(1H/2Hミックスレベル) にて, 図18-6の部分のレ^

ルが最小になるように調整する。

反転部分の拡大

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BT基板 TP6 TP7

750 ターミネータ

(C) | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

シグナルゼネレーター テクトロニクス1410

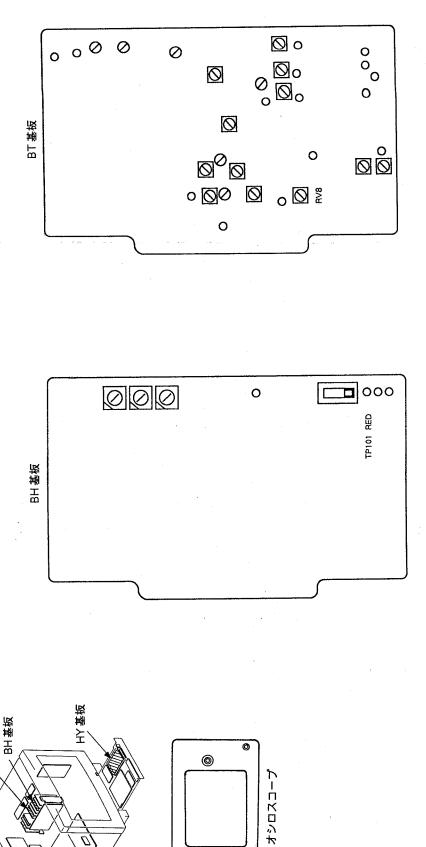
アデイ雑子 SE) 信号

カラーバー (REVERS

18-2-5. BT基板 0H/1H, 1H/2H MIX調整

図18-6





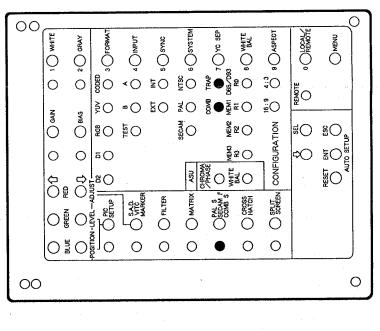
**©** 

アデギ雑子A

カラーバー信号

18-2-8. BT基板 クロマレベル調整

サブコントロールパネル (HY 基板)



(7)174-11 F WHITE REF 75% 75% AMPL

O Personal Control Con

シグナルゼネレーター テクトロニクス1410

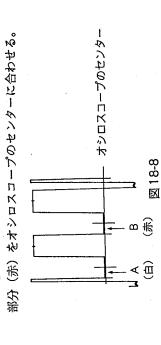
1. 本機のビデオ端子Aにカラーバー信号を入力する。 2. サブコントロールパネルのYC SEPボタンをTRAPに

オシロスコープをBH 基板の TP101 に接続する。 (DC0.1V/div:H)က

オシロスコープのポジションを回し, 図18-8のBの部分(赤) をオシロスコープのセンターに合わせる。 4.

YC SEPボタンをCOMBにする。

サブコントロールパネルのPAL S/SECAM F/COMB BT 基板の RV8 (クロマレベル) にて, 図18-8の Bの SボタンをONにする。 က် တဲ



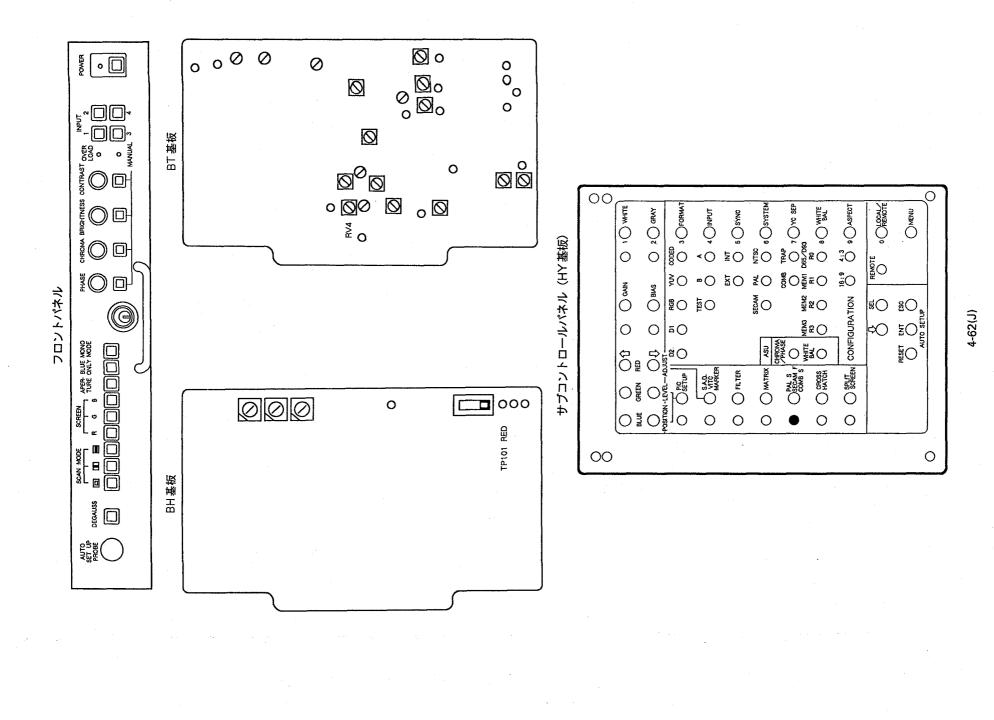


图 18-9

クロマコントロールにて 調整

オシロスコープ

本機のビデオ端子Aに変調12.5Tパルス信号を入力す

サブコントロールパネルのPAL S/SECAM F/COME

CHROMA MANUALコントロール (フロントパネル)

オシロスコープを BH 基板の TP101 に接続する。

დ. 4<u>.</u>

SボタンをONにする。

κi

調整後, BT 基板の RV4(輝度/クロマディレイ調整)

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にて、図18-9のように調整する。

にて、左右対称となるように調整する。

**(9)** 

BT 基板 TP101

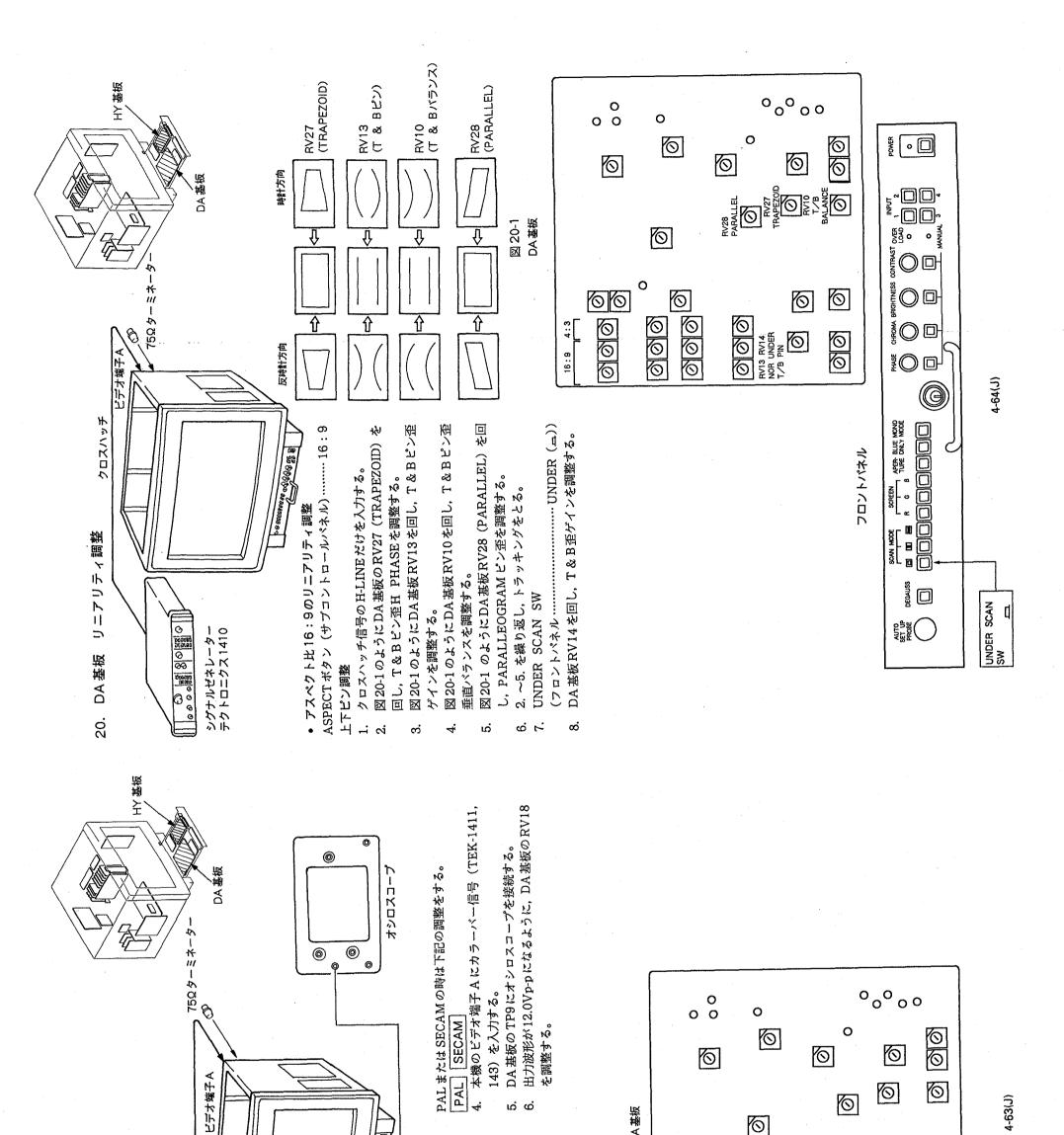
シグナルゼネレーター テクトロニクス 1410

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ス信号

変調12.5Tパル

18-2-9. BT基板 Y/C DELAY調整



က် တဲ

図19-1のように, 出力波形が12.0VppになるようにDA

基板の RV17を調整する。

本機のビデオ端子Aにカラーバー信号を入力する。

NTSC

(フルフィールド カラーバー信号) 7.5% セットアップ 100 IRE 75% AMPL

シグナルゼネレーター テクトロニクス1410 (NTSC) / 1411 (PAL) /143 (SECAM) カラーバー信号

G Bononic Scanner Control Cont

DA 基板の TP9 にオシロスコープを接続する。

12Vp-p

カラーバー信号

19. DA基板 垂直レベル調整

DA 基板

図19-1

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V LEVEL

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RV17 O V LEVEL 60Hz

**⑥ ⑥ ⑥** 

4:3

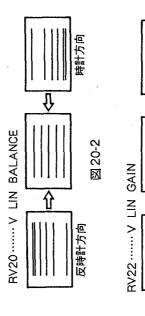
16:9

### 垂直リニアリティ調整

- 亜目シーノンフィ調エ 1. クロスハッチ信号のH-LINEだけを入力する。
- DA 基板 RV21 を回し, V.CENTER を調整する。
   図 20-2 のように DA 基板 RV20 を回し, V.LIN
- BALANCEを調整する。 図20-8のようにDA基板RV22を回し, V.LIN GAIN

4.

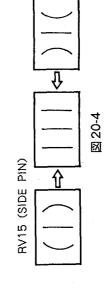
- を調整する。 DA 基板 RV23を回し,V.HEIGHT を調整する。
  - DA 基板 RV23 を回し、V.HEIGHT を調整
     2. ~5. を繰り返し、トラッキングをとる。

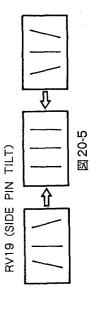


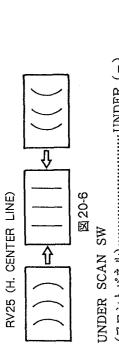
### サイドピン調整

- υイドしノ調エ 1. クロスハッチ信号のV-LINEだけを入力する。
- 2. 図20-4のようにDA基板RV15を回し、SIDE PINを調整オス
- 図20-5のようにDA基板RV19を回し、SIDE PIN TILTを調整する。 図20-6のようにDA基板RV25を回し、H CENTER LINEを調整する。

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DA 基板

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RV19 RV19 TILT

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- 水平リニアリティ調整
- (フロントパネル)……………………いNDER (ユ) DA 基板 RV16 を回し SIDE PIN を調整する。

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- クロスハッチ信号のV-LINEだけを入力する。 図20-7のようにDA基板RV6 (H LIN GAIN) を回
  - し, 水平リニアリティを調整する。

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RV21 V. CENT LIN CENT LIN CENT LIN CENT

0

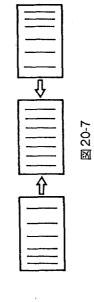
0

0

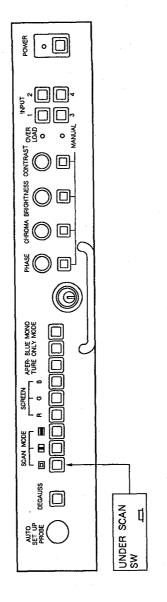
0

0

SIDE PIN RVIS NOR UNDER



フロントパネル

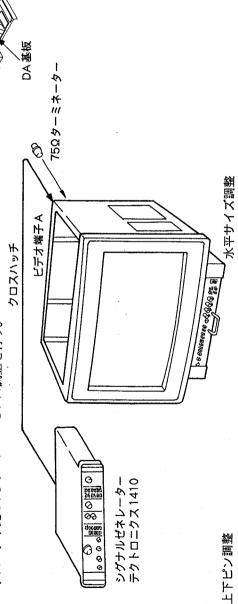


.... 4:3 ASPECT ボタン(サブコントロールパネル) • アスペクト比4:3のリニアリティ調整

HY 基板

#### 汗灣:

アスペクト比16:9のコンバーゼンス調整を行ってから、 アスペクト比4:3のコンバーゼンス調整を行う。



- . 2
- クロスハッチ信号の H-LINEだけを入力する。 図20-8のように DA 基板 RV30 を回し,T & B ピン歪 ゲインを調整する。
- DA 基板 RV29 を回し, H.WIDTH を調整する。 モノスコープ信号を入力する。 -i 2

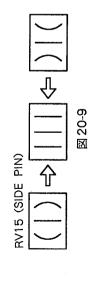
RV13 (T & B PIN) Counter clockwise 分

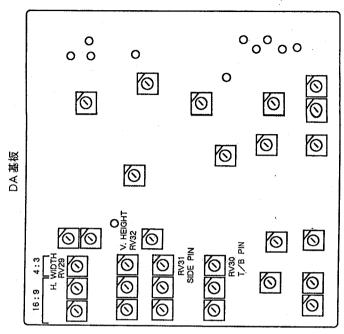
#### 図20-8

- 垂直サイズ調整 1. モノスコープ信号を入力する。
- DA 基板 RV32 を回し, V.HEIGHT を調整する c,

#### サイドピン調整

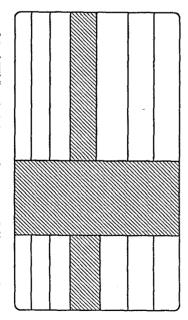
- クロスハッチ信号の V-LINE だけを入力する。
- 図20-9のようにDA基板RV31を回し、SIDE PINを 調整する。 ~; ~;





#### 水平周波数調整 21.

- クロスハッチ信号を入力し, SYNC selectorをEXTに H
  - する。(ユ) 図21-1のようにDA 基板RV5を回し, 画像が静止する かあるいは動きがゆっくりになるように調整する。 જાં



\* 画像の流れが静止するか、動きがゆっくりになる ように調整する。

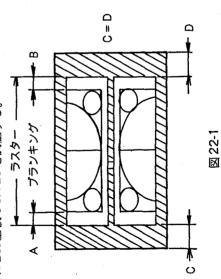
図21-1

#### DA基板水平センター/水平位相/ブラキング 調整 22.

- モノスコープ信号を入力し, UNDER SCAN SWを UNDERにする。(A)
  - ピクチャーモード
  - V.DELAY SW ......IN (A)  $\alpha$
- 図22-1 のようにラスターがすべて見えるようにDA 基 板の RV1 と RV7 を調整する。 က

水平センター調整

図22-1のようにラスターの外側が左右等しくなるよう にDA 基板のRV26 を調整する。 4.



#### 水平ブランキング調整

- DA 基板の TP1 にオシロスコープを接続する。 က်
- 図 22-2 のように H.BLK パルスの幅が 9.8 μs になるよ うに, DA 基板のRV1を調整する。 Ö.

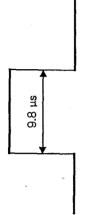


図 22-2

### 水平ブランキング/位相調整

図22-3のように左右のブランキング幅が等しくなるように, DA 基板の RV7 を調整する。 7

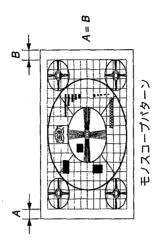
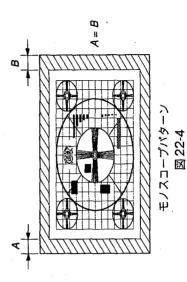
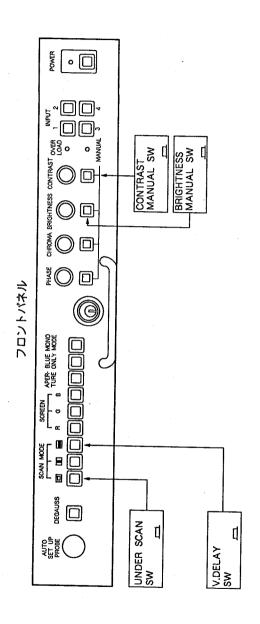


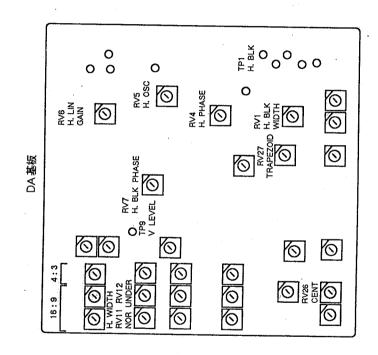
図 22-3

#### 水平位相調整

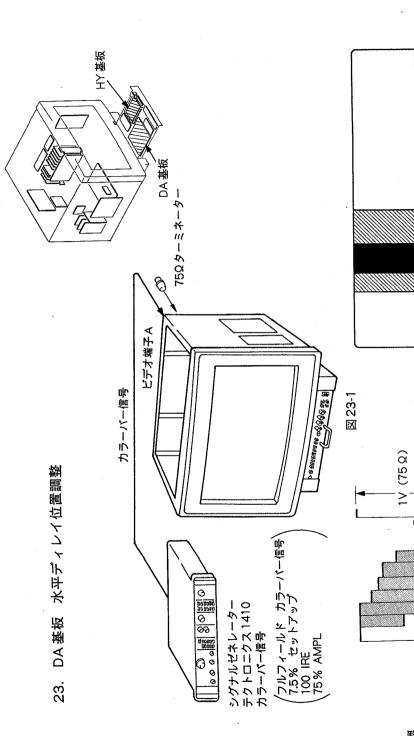
図22-4のように外側のラスターが左右等しくなるよう に, DA 基板の RV4 を調整する。 œ







4-69(기)



**米平ディレイパルス幅調整** 

FULL FIELD カラ

- . DA 基板の TP2 にオシロスコープを接続する。
- H-DELAY SWをIN/OUTに切り換える場合PULSE 幅が同じになるように、DA 基板 RV3 を調整する。

œ

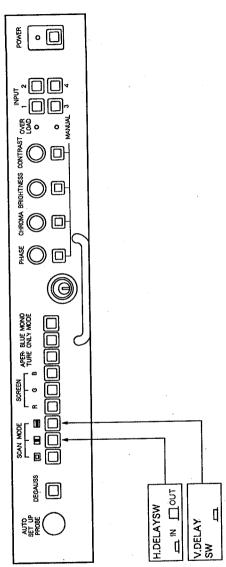
これらの長さを同じにする。 (A = Bになるように RV2を調整する。)

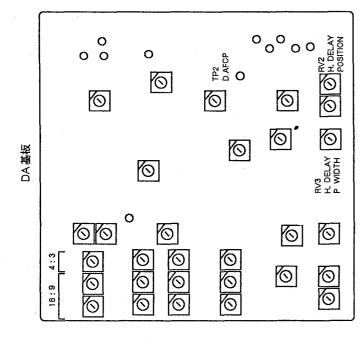
図23-2

水平ディレイ位置調整

- 1. 図23-1のように接続する。
- 2. INPUT selector A (A) に, SYNC selectorをINT (口) にH DELAY & V DELAY SWをIN (A) にする。(パルスクローズ位置)
- DA 基板 RV2 を回し図23-2のように H-DELAY 位置を 調整する。

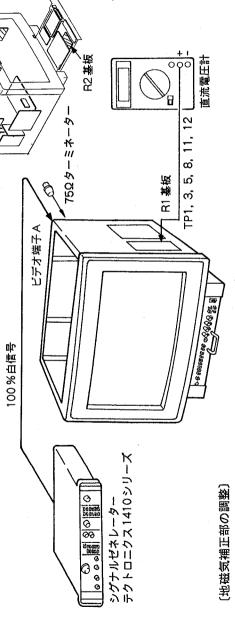
フロントパネル





## 24. R1, R2 基板 ビームランディング補正回路の調整

R1 基板



- R2基板のLANDING ADJ DIRECTION SW (SW1) をSE (6) にする。
- R1基板のTP1に直流電圧計を接続し、出力電圧が-2.00 ± 0.01 Vdc になるようにRV1で調整する。
- 3. LANDING ADJ DIRECTION SWをS (8) にする。
- 4. R1基板のTP3に直流電圧計を接続し、出力電圧が-3.00 ± 0.01Vdc になるようにRV2で調整する。
- 注:この設定値は地磁気の水平分力が0.3ガウスの時のものなので,水平分力がこの値と異なる時は4-5. 基礎調整の項を参照すること。

#### [ビーム電流補正部の調整]

- フロントパネルのCUT OFF SELECTでR.G.B共に CUT OFFする。
- R1基板のTP5に直流電圧計を接続し、この出力が50± 20mV になるようにRV3を調整する。
  - 3. 白信号を受像する。(内部または外部信号)
- 4. フロントパネルのCONTRAST MANUAL SWをON LCONTRASTコントロールにてTP5の出力が2.2Vdc になるように調整する。
- TP5とTP6, TP5とTP7を各々ショートクリップで接続する。
- TP8 に直流電圧計を接続し、出力が0±0.1VdcとなるようRV4を調整する。
- TP5とTP9, TP5とTP10を各々ショートクリップで接続する。
  - 8. TP11に直流電圧計を接続し、出力が $0\pm0.1V$ dcとなるようにRV5を調整する。

#### [周囲温度補正の調整]

キャビネットを取りはずした状態で行う。 TP12に直流電圧計を接続し, RV6で次の値になるように調

 $TP12 = (Ta - 25) \times 0.1$ 

整する。

Ta = 周囲温度

注:周囲温度補正は R1 基板の D7 で行っている。

## [ランディング調整 (R2 基板)の動作確認方法]

- 1. 白信号を受像する (内部または外部信号)
- 2. N基板のCUT OFF SELECTで緑単色にし、LANDING ADJ DIRECTIONS SW (SW1)をE(4)に合わせる
- 3. R2基板のLANDING ADJ ON/OFF SW (SW2) 並びにLANDING FINE ADJ ON/OFF SW (SW3) そのiする。
- 4. RV106~111のボリュームをメカ的にセンターにする。
  - 5. RV100を左に回すと画面の左上が赤味を帯び,右に回すと青味を帯びることを確認し,そのままピュリティを悪くしておく。
- RV101~105についても同様に確認し、いずれもピュリティを悪くしておく。
- . LANDING FINE ADJ ON/OFF SW (SW3) をOFFし,ピュリティが良くなることを確認する。
  - 8. LANDING FINE ADJ ON /OFF SW (SW3) をONする。
- 9. LANDING FINE ADJ ON/OFF SW (SW2)をOFFし, ピュリティが良くなることを確認する。
  - 10. LANDING FINE ADJ ON/OFF SWをONする。 11. RV100~105をメカ的にセンターにする。
- 12. LANDING FINE ADJ ON/OFF SW (SW3) をOFFにする。
- 13. LANDING ADJ DIRECTION SW (SW1)を1ステップずつ回し、画面上の色がスムーズに変わることを確認する。

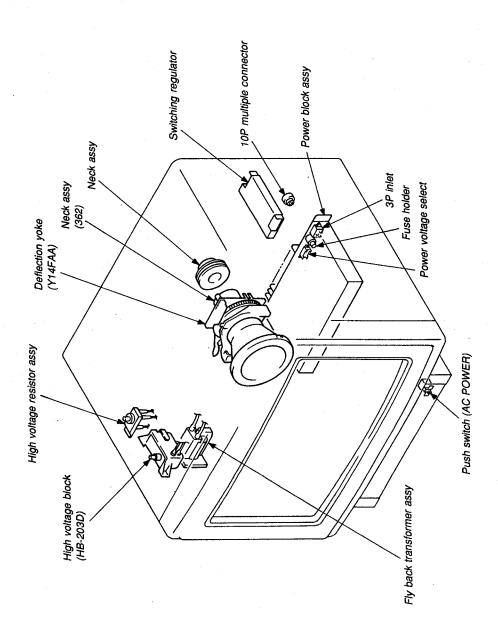
#### W基板

### 注: RV100 RV102 RV104 RV105 RV105

調整ボリューム (RV100~105) と画面は対応している。

#### SECTION 4 ADJUSTMENTS

#### 4-1. INTERNAL VIEW



## 4-2. CIRCUIT BOARDS LOCATION

BH board
(Y/COLOR DIFFERENCE/RGB
SIGNAL SWITCHING, Y-C MATRIX,
CONTRAST/BRIGHNESS
CONTROL) BG board (COLOR GAIN CONTROL, COMPONENT R-Y/ B-Y AMP & DELAY, APERTURE CONTROL, DELAY, NTSC MATRIX SW, G-Y MATRIX AMP) (CONVERGENCE CONTROL) HX board (INPUT SELECT) HW board (MANUAL CONTROL) BI board
(DRIVE CONTROL, BEAM
CURRENT CONTROL)
BJ board
(SYNC PROCESSING &
PULSE GEN) HY board (CONTROL FUNCTION SELECT) R1 board (LANDING CORRECTION) (MANUAL VOLUME) BT board (BVM-2811 only)
(3 LINE DYNAMIC COMB FILTER, 2 LINE SIMPLE COMB FILTER, BPF)

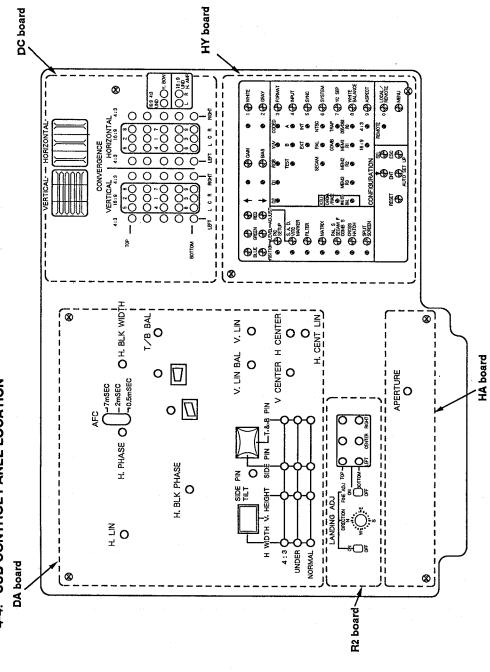
BC board (BVM-2811 only)
(NTSC DECODER Y, TRAP)
BD board (BVM-3011P only)
(PAL DECODER Y, TRAP) (POWER LED)

DC board HH board (SYSTEM CONTROL) GE board (RELAY) BV1 board (BVM-2811 only)
(S/P CONVERTER, CABLE DRIVE, ECL/TTL
CONV D-1 DECODER, COMP SYNC GEN)
| SWITCHING REGULATOR BA3 board (BVM-2811 only)
BA board (BVM-3011P only)
(SYNC SELECT &
SYNC SEP, HOOK UP)
BV2 board (BVM-2811 only)
(BUFFER & DELAY, D/A CONV, Y AMP R-Y/B-Y
AMP & DELY) - Y board (PANEL CONTROL) HA board DA board (DEFLECTION WAVEFORM) GC board (REG) TB boad (MOTHER BOARD) (AC REC, DC REG) QA board (COMPOSITE VIDEO INPUT) GB board (OVER VOLTAGE PROTECTOR) GA board QB boad (RGB/COMPONENT INPUT) W board (BVM-3011P only) (RGB/COMPONENT)
V2 board (BVM-2811 only)
V board (BVM-3011P only)
(REMOTE) (CONVERGENCE WAVEFORM) PA board (HIGH VOLTAGE PROTECTOR) (VIDEO OUT AMP) EA board (H OUT) TA board (MOTHER BOARD) EB board PB board (TUO V) C board (CRT SOCKET) DB board (FBT) BK board

R2 board (LANDING CONTROL)

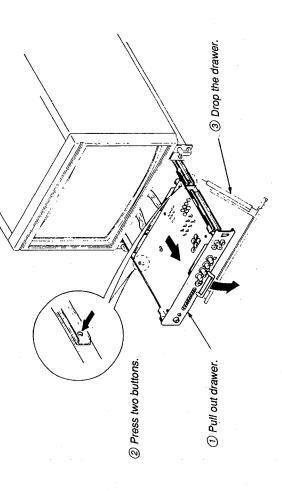
DA	3-35	4-78	37	25	82	48	N		1		19	16	9		<u> </u>	······································				<u> </u>
Ď	က်	4-7	3-37	6 5-81	0 5-78	7-34	¥	1			5 5-119	1 5-116	2-50					10		
ပ	1		-	5-106	5-110	7-34	¥		1		5-115	5-111	7-48	N	1			5-135	1	7-59
BV2	3-9	4-96	3-10	5-73	5-75	7-31	¥	1	ı		5-114	5-111	7-48	>		1	1	5-114	5-112	7-59
BV1	9-6	4-94	3-10	5-71	5-68	7-29	MH	ı		1	5-113	5-111	7-48	*	ı	1	I	5-123	5-126	7-59
ВТ	3-21	4-49	3-21	5-65	5-63	7-25	壬	I	1	1	5-113	5-111	7-48	72		l	1	5-124	5-126	7-58
BK	3-17 3-19	4-47	3-17	5-59	5-61	7-22	НА	ı		ŀ	5-113	5-112	7-47	>	ı	1	1	5-124	5-126	7-58
B	3-13	4-21 4-32 4-46	3-14	2-57	5-54	7-20	GE	ı	1		5-129	5-133	7-47	22	l	I	I	5-15	5-17	7-58
<u> </u>	3-11 3-19	1	3-11	5-49	5-51	7-18	ပ္ဗ		ı		5-123	5-125	7-47	TA		1	1	5-11	5-13	7-58
ВН	2-8	4-23	3-7	5-47	5-44	7-15	gg	3-29		3-30	5-100	5-103	7-46	22	3-43	4-87	ı	5-129	5-131	7-57
BG	3-5	4-23 4-29	3-6	5-39	5-41	7-13	GA	3-29	4-13	3-30	5-101	5-103	7-44	Æ	3-43	4-87	1	5-128	5-131	7-55
BD	3-23	4-63	3-24	5-37	5-34	7-10	EB	3-27		3-28	5-95	5-97	7-43	8	3-2	I	3-4	5-123	5-125	7-54
BC	3-25	4-33	3-26	5-29	5-31	7-8	EA	3-39	-1	3-39	5-94	5-97	7-41	Ø.	3-2	ı	3-4	5-123	5-125	7-54
ВАЗ	3-1	4-88	3-2	5-27	5-24	7-5	ည္	3-31	ı	3-32	5-91	5-89	7-40	88	3-41	1	3-42	5-106	5-110	7-54
ВА	3-2	4-23 4-27	3-4	5-19	5-21	7-2	DB	3-31	1	3-32	5-83	5-85	7-37	PA	3-41	4-15	3-42	5-107	5-109	7-52
BOARD	CIRCUIT DISCRIPTION	ADJUSTMENTS	BLOCK DIAGRAM	MOUNTING DIAGRAM	SCHEMATIC DIAGRAM	ELECTRICAL PARTS LIST	BOARD	CIRCUIT DISCRIPTION	ADJUSTMENTS	BLOCK DIAGRAM	MOUNTING	SCHEMATIC DIAGRAM	ELECTRICAL PARTS LIST	BOARD	CIRCUIT DISCRIPTION	ADJUSTMENTS	BLOCK DIAGRAM	MOUNTING	SCHEMATIC DIAGRAM	ELECTRICAL PARTS LIST

## 4-4. SUB CONTROL PANEL LOCATION



## ADJUSTING METHOD OF DRAWER BLOCK

\* Pull out sub-control panel and press two stopper buttons to drop it 60° as shown in the figure.



4-4(E)

### SETUP ADJUSTMENT IN CASE OF PICTURE TUBE REPLACEMENT 4-5.

When the picture tube has been replaced, make the following adjustments. Convergence and white balance are normally adjusted by the potentiometers on the sub control panel. (Refer to pages 4-6, 4-7, 4-8 and 4-9)

- [Jigs Tools and Measurement Equipment Required]
  1. SIGNAL GENERATOR (TEKTRONIX 1410 and 1411 Series)
  - COLOR ANALYZER
  - LUMINANCE METER

#### [Landing adjustment]

- Connect signal generator and receive a white signal. Set BRIGHTNESS and CONTRAST VRs to the preset position (□).
- Face the CRT screen toward East (or West) and press the DEGAUSS switch. က်
  - Set the purity knob to mechanical center as shown in Fig. 4

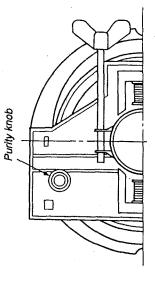


Fig. 1-1.

- Slide DY (Deflection Yoke) as far forward as possible.
- Set the neck assembly in the position shown in Fig. 1-2. . 6

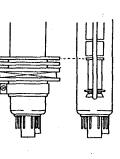
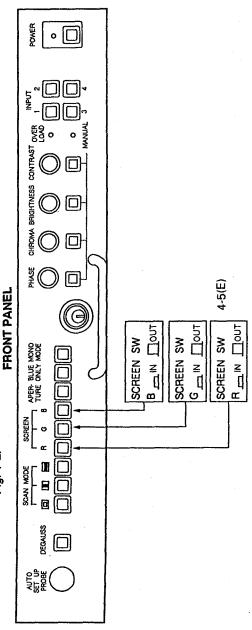


Fig. 1-2.



- Set the screen the green only (R and B on the FRONT ۲.
- PANEL are in the IN position and G in the OUT position). Tum purity knob as shown in Fig. 1-3 to bring the green on the center of the screen. ∞i

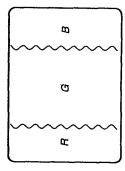


Fig. 1-3.

Slide DY back for uniform green raster.

6

- are in the IN position and R in the OUT position) and check Make the screen red only (G and B on the FRONT PANEL 10.
- are in the IN position and B in the OUT position) and check Make the screen blue only (R and G on the FRONT PANEL landing. Ξ.
- Adjust DY tilt and tighten DY set-screw.
- Secure the DY with the spacers. (Fig. 1-4) 12. 13.

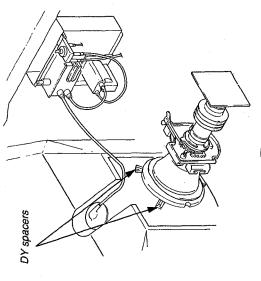


Fig. 1-4.

• Final check
After adjustments, check that there is no mislanding by facing the CRT towards East, West, North and South directions.

#### [Focus adjustment]

- Connector signal generator (TEKTRONIX 1410 and 1411).
  - Input a dot or cross-hatch signals.
- Adjust the FOCUS control for best focus in the central portion of the screen as shown in Fig. 1-5. 3 6

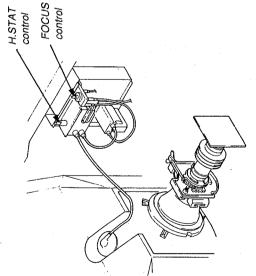


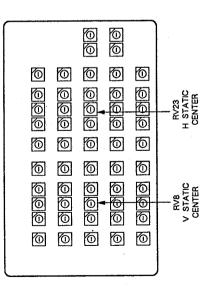
Fig. 1-5.

### Convergence Adjustment]

#### Preparation

- Complete the signal generator connection and feed the dot and cross-hatch signals.
- Set the CONTRAST and BRIGHTNESS controls at the points where the dots and the cross-hatch can be observed clearly.  $\alpha$ 
  - 2 the <u></u> (RV23) board to mechanical center as shown in Fig. 1-6.

    DC board CENTER control Set the H.STATIC  $\ddot{\omega}$



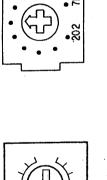


Fig. 1-6.

#### [Static Convergence]

## Horizontal Static Convergence

- Adjust H.STAT control of DCT BLOCK to match the convergence of red and green in the horizontal direction at screen center.
- ij convergence in the same direction on all over the screen. s. plne correction when Perform the HMC ri
  - Move the BMC magnet to correct H.static convergence as shown in Fig. 1-7. ω.

### Vertical Static Convergence

- Adjust the V.STATIC CENTER (RV8) on the DC board to match the convergence of red and green in the vertical direction at screen center.
- When blue is out of the convergence in the same direction all over the screen, perform the VMC correction. 7
- Move the BMC magnet to correct static convergence as shown in Fig. 1-7. ε.

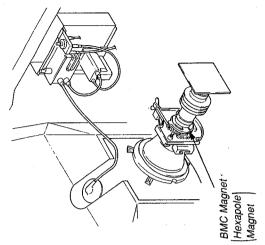
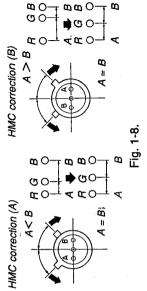


Fig. 1-7.

HMC and VMC correction for BMC Magnet.
HMC (Horizontal, Mis, convergence) correction and motion of the Electron Beam with the Hexapole Magnet.



VMC (Vertical, Mis, convergence) correction and motion of the Electron Beam with the Hexapole Magnet.

7

Mechanical center

OR Ö q =Ö C 0 er 1 . 9 9  $C \times D$ VMC correction (B) D O ÓA C = DO.B. 0 > 0 O G S VMC correction (A) ۵

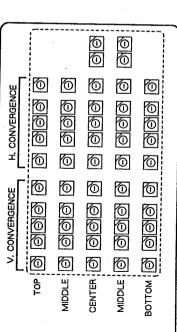
Fig. 1-9.

### [DYNAMIC CONVERGENCE]

## Convergence adjustment of 4:3 aspect picture.

- ASPECT button on the HY board ..... 1. 2.
- 4:3 the Adjust CONVERGENCE controls (RV1 to RV30) DC board as shown in Fig. 1-10
  - It can be adjusted as Red and Blue move in symmetry to the Green. (Green does not move) 3
    - Adjust the convergence corresponding to the portion of screen as follows.
- to ↑ Always match the convergence in the order of center → comer against the screen. → on X axis Ś

#### DC board



### **[CONVERGENCE PROCESS]**

- .....NOR (П) UNDER SCAN switch....
- Adjust RV23 and RV8 on the DC board to coincide with the R, G and B dots at the center of the screen as shown in Fig.

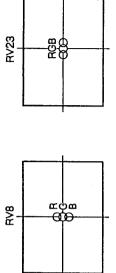
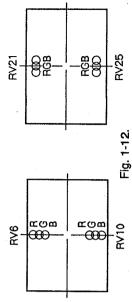


Fig. 1-11.

Adjust RV6, RV10, RV21 and RV25 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-12. સ



and RV18, RV28 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-13. Adjust RV3, RV13 4

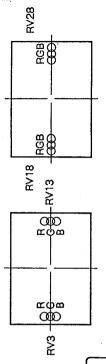


Fig. 1-13.

Adjust RV1, RV5 and RV11, RV15 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-14.

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CONVERGENCE

CONVERGENCI

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16:9

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**RV41** 

RV16 RV21

RV51

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RV221

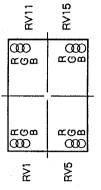


Fig. 1-14.

Adjust RV16, RV20 and RV26, RV30 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-15.

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RV19 RV24 RV28

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RV4 RV9 RV14

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§ 6

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RV10 RV15

**№** 

\$ O

Fig. 1-10.

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RV18 RV23 RV28

6

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0

6

10

RV53

RV13

88

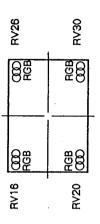
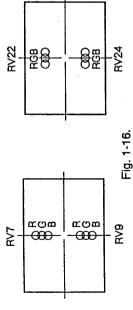


Fig. 1-15.



Adjust RV2, RV4 and RV12, RV14 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-17. ∞:

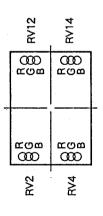


Fig. 1-17.

Adjust RV17, RV19 and RV27, RV29 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-18. 6

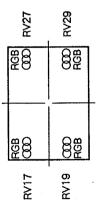


Fig. 1-18.

10.

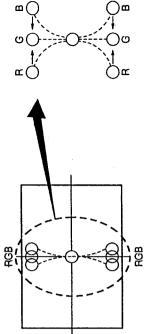


Fig. 1-19.

Adjust RV32 and RV33 (UNDER SCAN H.AMP) on the DC board to coincide with the R, G and B dots as shown in Fig. 1-20. 12

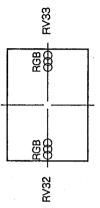
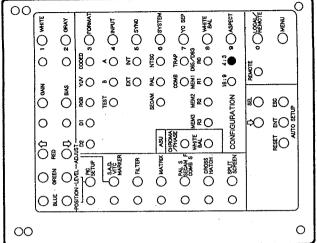


Fig. 1-20.

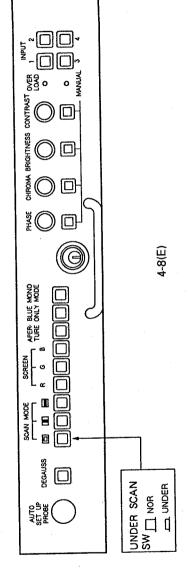
## SUB CONTROL PANEL (HY board)



FRONT PANEL

POWER

• 🔲



& ADJUSTMENTS 

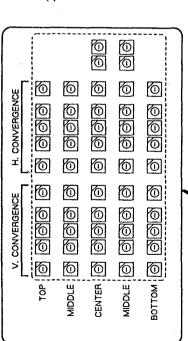
## Convergence adjustment of 16:9 aspect picture.

- 6:91.....16:6 ASPECT button on the HY board ......
- Adjust CONVERGENCE controls (RV41 to RV60) on the DC board as shown in Fig. 1-21.
  - It can be adjusted as Red and Blue move in symmetry to the Green. (Green does not move) સં
- Adjust the convergence corresponding to the portion of the screen as follows.

4

5.

uo ↑ Always match the convergence in the order of center Y axis → on X axis → comer against the screen.



- . 2
- ICONVERGENCE PROCESS]

  1. UNDER SCAN switch......NOR ( □ )

  2. Adjust RV43, RV48 and RV53, RV58 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-22.

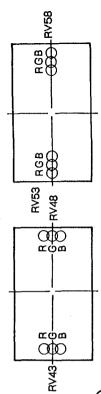


Fig. 1-22.

Adjust RV41, RV45 and RV46, RV50 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-23. સં

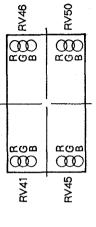


Fig. 1-23

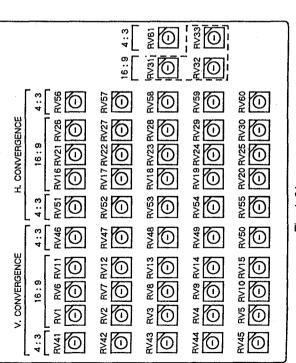


Fig. 1-21.

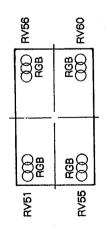


Fig. 1-24.

5. Adjust RV42, RV44 and RV47, RV49 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-25.

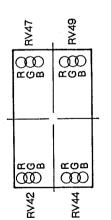


Fig. 1-25.

STNEMTSULGA .A IIIIIIIIII

6. Adjust RV52, RV54 and RV57, RV59 on the DC board to coincide with the R, G and B dots as shown in Fig. 1-26.

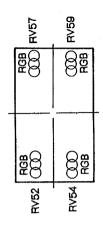


Fig. 1-26.

7. Adjust RV61 (Y.BOW) on the DC board to coincide with the R, G and B dots as shown in Fig. 1-27.

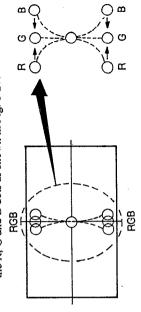
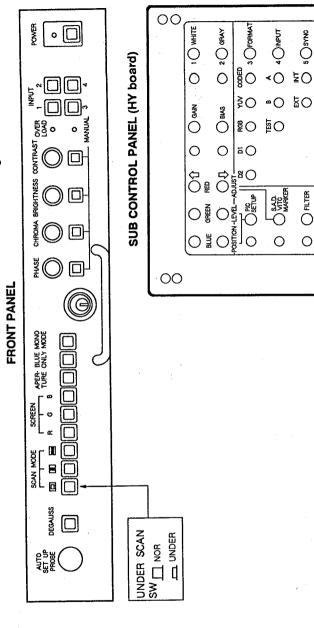


Fig. 1-27.



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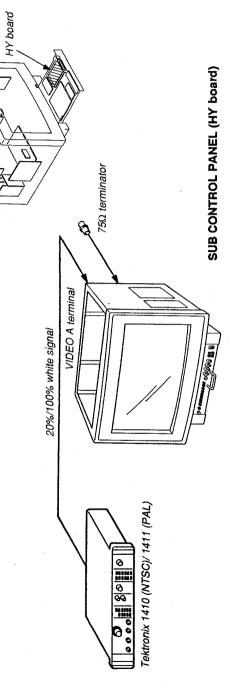
9 ASPECT

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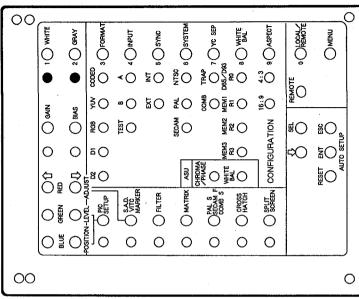


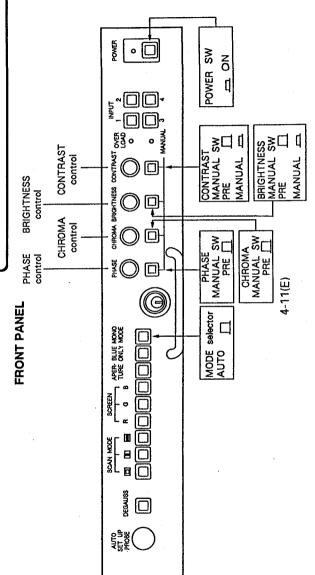


- BRIGHTNESS MANUAL switch...... MANUAL ( 🕳 ) CONTRAST MANUAL switch ...... MANUAL ( 🗷 )
  - become 100 Ş Turn BRIGHT and CONTRAST SAVE the DATA. PRESET MENU. d
- Switch off the MANUAL switches of CONTRAST and BRIGHT. 3
  - Input 20% white signal to VIDEO A connector.
- Tum BIAS controls (S21: Red, S23: Green, S32: Blue) on the HY board to adjust the BRIGHTNESS to 1.8 cd/m (nit) and white balance using COLOR ANALYZER and check 1.8 cd/m (nit) by LUMINANCE METER. 4. 2.
- to 68 cd/m (nit) and white balance using COLOR ANALYZER and check 68 cd/m (nit) by LUMINANCE NO-----Turn GAIN controls (\$20: Red, \$22: Green, \$31: Blue) on the HY board to adjust the BRIGHTNESS at HIGH LIGHT White button ..... 6.
- ∞ 0,

METER.

Repeat procedure steps 4 to 8 if necessary. Save the date with SAVE BALANCE MENU.





### B+ PROTECTOR (MR52, R53)

When replacing the following components (marked 🖪 on the schematic diagram), make this confirmation.

GB Board · D5, D6, D7, D8, Q3, Q4, Q5, R4, R5, R1 R20, R21, R22

It is necessary to use a digital multimeter for this confirmation Connect a digital multimeter to TP2 on GA Board.

- Receive a color bar signal and set CONTRAST as BRIGHTNESS controls to preset position. (manual butte \_;
- Short-circuit R55 on GA board. 3 %
- Connect a 100kQ variable resistor between TP4 and TI (GND) on GA board.
- 100kΩ variable resistor so that the value of the resistor Confirm that the reading on the digital multimeter drop abruptly from +182.0V to +216.0V to 0V by turning the decrease from maximum value. 4.
  - If step 4 isn't satisfied, select resistance values of R52 at R53 which satisfy the specifications. Ś
    - Restore these to their original states and confirm that the voltage at TP2 is  $150.0 \pm 1.0$ V. 6.

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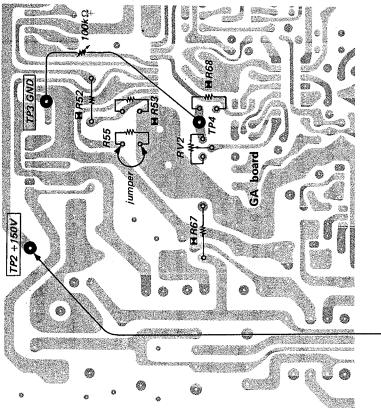
#### (M R67, R68) B+ MAX CONFIRMATION

When replacing the following components (marked 🖪 on th schematic diagram), make this confirmation.

GA Board ...... C59, IC3, R67, R68, R78, RN

It is necessary to use a digital multimeter for this confirmation Connect a digital multimeter to TP2 on GA Board. Receive a color bar signal and set CONTRAST and \_;

- BRIGHTNESS controls to preset position. (manual button is out □)
- Commum mar the reading on the digital multimeter is +165.0V ± 13.0V when RV2 variable resistor is turned to fully clockwise.
  - If the specifications are not met, select resistance valu for R67 and R68 which satisfy the specifications. ઌ૽
- After confirmation, make the reading on the digital o multimeter into +150.0V ± 1.0V by adjusting RV2 GA Board. 4.

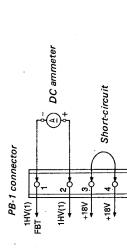


#### (**K** R222) BEAM CURRENT PROTECTOR 1 CONFIRMATION

When replacing the following components (marked Z on the

- R213, D205, D206, D215, IC2, R201, R202, R213 R214, R220, R221, R222, R223, R224, R242 PA Board ... D205, D206, D215, IC2, schematic diagram), make this confirmation.

  PA Board ··· D205, D206, D215, IC2, PB Board ··· FBT, R1, R2, R5
- Remove the PB-1 connector from PB board.
- Connect a DC ammeter between Pin (1) and Pin (2) of the PB-1 connector and short-circuit Pin (3) and Pin (4) with a -i ~i



Connect a digital multimeter TP2 and TP4 (GND) of PA

the

(Set t board

all-white signal ( UP selector on HB

WHITE/OPERATE/SET

Don't do it in free run.

- the to (Set 1 board all-white signal
  UP selector on HB Select the built-in WHITE/OPERATE/SET

Don't do it in free run.

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If the reading on the digital multimeter of TP3 is between

PA board is between +31.0V and +33.5V.

+31.0V and +33.5V and more than 32.5V, mount a 1MΩ 1/4W resistor (metal-film) should be mounted at the portion

Confirm that the reading on the digital multimeter of TP3 on

of R239 on PA board. (Normally in this portion no

Short-circuit R213 on PA board. Short-circuit C1 on BI board.

£. ∞ 0;

component is mounted.)

Rotate the BRIGHTNESS and CONTRAST controls and

confirm that the raster disappears when the value indicated

on the DC ammeter is 2.20mA  $\pm 0.35$ mA.

Remove the short-circuit from R213 and C1 and restore the

10.

PB-1 connector to its original state

- Confirm that the reading on the digital multimeter of TP2 on PA board is between +31.0V and +33.5V.
  - If the reading on the digital multimeter of TP2 is between 1/4W resistor (metal-film) should be mounted at the portion of R222 on PA board. (Normally in this portion no +31.0V and +33.5V and more than 32.5V, mount a 1MΩ component is mounted.)
- Short-circuit R231 on PA board.
- Short-circuit C1 on BI board. 6.80
- Rotate the BRIGHTNESS and CONTRAST controls and confirm that the raster disappears when the value indicated on the DC ammeter is 2.20mA  $\pm 0.35$ mA.
  - Remove the short-circuit from R231 and C1 and restore the PB-1 connector to its original state. 10.
    - Remove the jumpers and DC ammeter and reconnect the Ξ.
- maximum positions and confirm that the ABL operates (OVERLOAD Lamp Lights up). Set the BRIGHTNESS and CONTRAST controls to their 12.
- Remove the jumpers and DC ammeter and reconnect the Set the BRIGHTNESS and CONTRAST controls to their maximum positions and confirm that the ABL operates (OVERLOAD Lamp Lights up). PB-1 connector Ξ. 12.

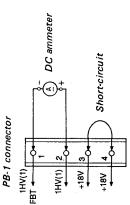
## BEAM CURRENT PROTECTOR 2 (M R239)

DC ammeter

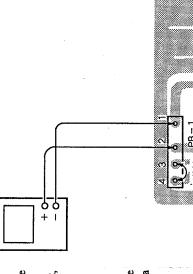
When replacing the following components (marked \( \mathbb{\Z} \) on the schematic diagram), make this confirmation. 

PA Board ... D204, D216, IC3, R203, R204, R231, R232, R237, R238, R239, R240, R241, R247 PB Board ··· R3, R4, R6, FBT

- Remove the PB-1 connector from PB board.
- Connect a DC ammeter between Pin (1) and Pin (2) of the PB-1 connector and short-circuit Pin (3) and Pin (4) with a jumper. 1. 2.



Connect a digital multimeter TP3 and TP4 (GND) of PA board.



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- (GND) of PA Connect a digital multimeter TP2 and TP4
  - (Set board HB signal Select the built-in all-white signs WHITE/OPERATE/SET UP selector on WHITE) board.
- Don't do it in free run.
- neter of TP2 on Confirm that the reading on the digital multin PA board is between +31.0V and +33.5V. s,
- If the reading on the digital multimeter of TP2 is between +31.0V and +33.5V and more than 32.5V, mount a 1MΩ 1/4W resistor (metal-film) should be mounted at the portion portion no of R222 on PA board. (Normally in th component is mounted.)
  - Short-circuit R231 on PA board.
- Short-circuit C1 on BI board.
- confirm that the raster disappears when the value indicated on the DC ammeter is 2.20mA  $\pm$  0.35mA. Remove the short in 1. controls a Rotate the BRIGHTNESS and CONTRAST
  - reconnect the restore the Remove the short-circuit from R231 and C1 Remove the jumpers and DC ammeter and PB-1 connector to its original state. 10.
- Set the BRIGHTNESS and CONTRAST controls to their ABL operates maximum positions and confirm that the (OVERLOAD Lamp Lights up). 12.

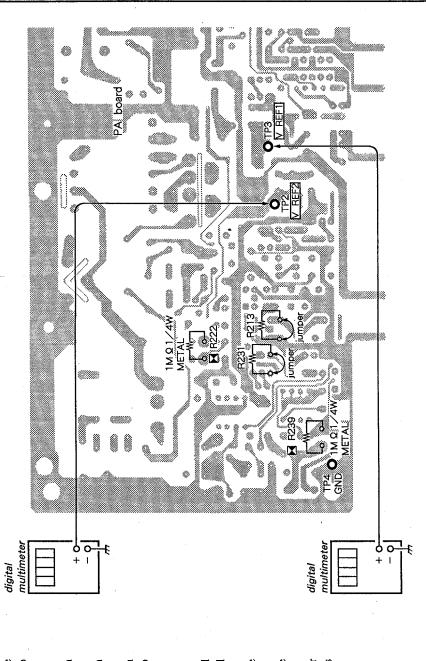
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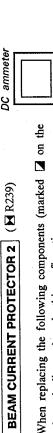
- (Set the board to all-white signal ( UP selector on HB Select the oun-...
  WHITE/OPERATE/SET Don't do it in free run
  - Confirm that the reading on the digital multimeter of TP3 on PA board is between +31.0V and +33.5V

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- 1/4W resistor (metal-film) should be mounted at the portion If the reading on the digital multimeter of TP3 is between +31.0V and +33.5V and more than 32.5V, mount a 1MQ R239 on PA board. (Normally in this portion no component is mounted.) ō 6.

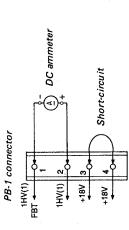
  - Short-circuit R213 on PA board. Short-circuit C1 on B1 board.
- Rotate the BRIGHTNESS and CONTRAST controls and confirm that the raster disappears when the value indicated the DC ammeter is 2.20mA ± 0.35mA ü **6.** ∞ 6.
- Remove the short-circuit from R213 and C1 and restore the 10.
- Remove the jumpers and DC ammeter and reconnect the 11.
- Set the BRIGHTNESS and CONTRAST controls to their maximum positions and confirm that the ABL operates (OVERLOAD Lamp Lights up). 12.



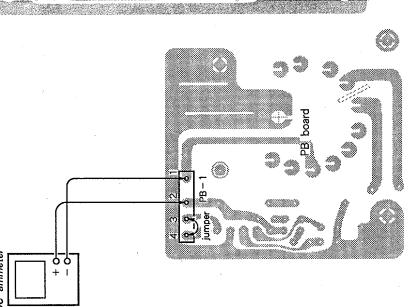


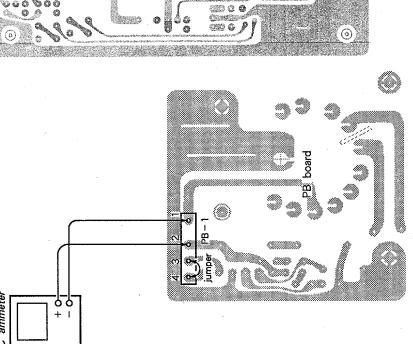
- When replacing the following components (marke schematic diagram), make this confirmation.

  PA Board ··· D204, D216, IC3, R203, R204, R237, R238, R239, R240, R241,
- Remove the PB-1 connector from PB board.
- Connect a DC ammeter between Pin (1) and PB-1 connector and short-circuit Pin (3) and jumper. 2 :



(GND) of PA Connect a digital multimeter TP3 and TP4 board. ന്





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Pin ② of the Pin ④ with a , R231, R232, , R247 PB Board ... R3, R4, R6, FBT

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When replacing the following components (marked on the schematic diagram), make this adjustment.

PA Board ... D205, D207, D215, IC2, R201, R202, R21 R214, R225, R226, R227, R228, R243, R24 ☑ DCT block

It is necessary to use an electrostatic voltmeter or equivalent fi this adjustment. Connect the electrostatic voltmeter to the ano-

Even though an electrostatic voltmeter may not be used, conne digital multimeter to @ pin of IC4 on PA Board.

cab.

## In case of using electrostatic voltmeter

Connect the electrostatic voltmeter to the anode cap and connect a digital multimeter to TP1 and TP4 (GND) on PA board.

Note: Use an electrostatic multimeter which is calibrated, and which has  $2 \times 10^{\circ}\Omega$  or more input impedance. (Example: ESH-27X or ESH-23X of the SINGER COMPANY)

Use a digital multimeter which has 4 digits or more. Receive a color bar signal and set the CONTRAST and BRIGHTNESS controls to the preset positions. 7

Determine the values of R227 and R228 as to get voltage 9.55  $\pm$  0.13V at TP1. (manual switch is OUT □) સં

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Ö Connect 500kQ variable resistor with R126 in parallel PA board. 4

Confirm that the reading on the electrostatic voltmeter drops abruptly from 28.0kV to 30.0kV to 0V by turning slowly the 500kΩ variable resistor so that the value of the resistor 'n.

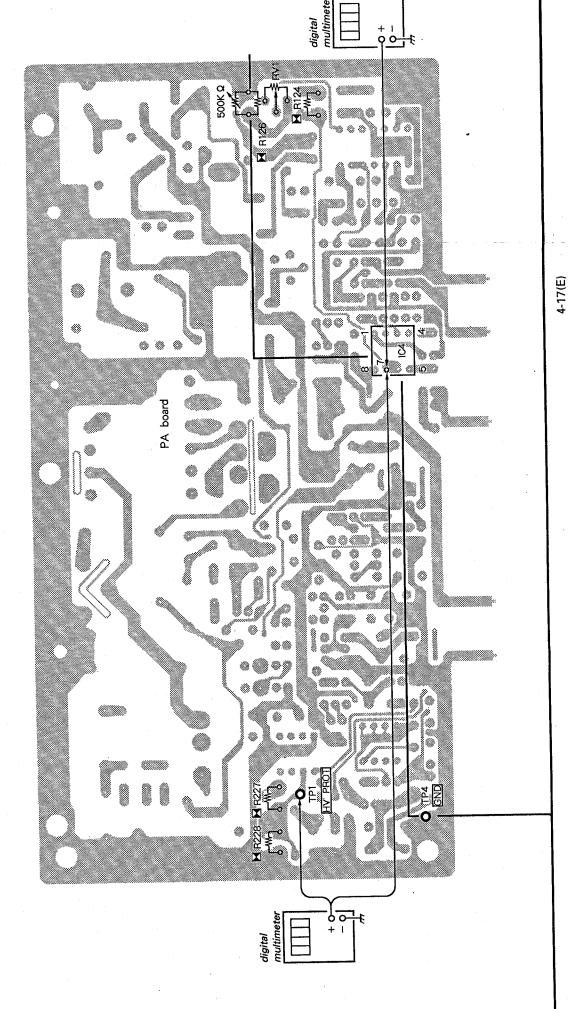
Remove the 500kΩ variable resistor from R126 and confirm again that the voltage of the anode is 27.0kV  $\pm$  0.1kV. decrease from maximum value. 6

## In case of not using an electrostatic voltmeter

(using a digital multimeter.)

(KR227, R228)

- Connect the digital multimeter to TP1 and TP4 (GND) and to Pin ( of IC4 and TP4 (GND).
- Receive a color bar signal and set the CONTRAST and BRIGHTINESS controls to the preset positions. Determine the values of R227 and R228 as to get voltage of
  - 9.40 ± 0.13V at TP1
- Connect 500kQ variable resistor with R126 in parallel on PA board.
- Confirm that the raster disappears when the voltage at Pin  $\odot$  of IC4 reaches 9.40  $\pm$  0.13V by turning slowly the 500kΩ variable resistor so that the value of the resistor decrease
- Remove the 500kΩ variable resistor from R126. from maximum value.



4-16(E)

4-18(E)

#### (**K**R124, R126) HIGH VOLTAGE REGULATOR CONFIRMATION

When replacing the following components (marked on the schematic diagram), make this adjustment.

PA Board · · · D216, IC1, IC4, R123, R124, R125, R126, R136, R137, R138, R203, R204, RV1

It is necessary to use an electrostatic voltmeter or equivalent for this adjustment. Connect the electrostatic voltmeter to the anode

Even though an electrostatic voltmeter may not be used, connect digital multimeter to (7) pin of IC4 on PA Board.

Note: Use an electrostatic voltmeter which is calibrated, and SINGER which has  $2 \times 10^{\circ}\Omega$  or more input impedance. example: ESH-27X or ESH-23X of the

Use a digital multimeter which has 4 digit or more. COMPANY

In case of using electrostatic voltmeter
Receive a color bar signal and set CONTRAST and
BRIGHTNESS controls to preset position. (manual switch is

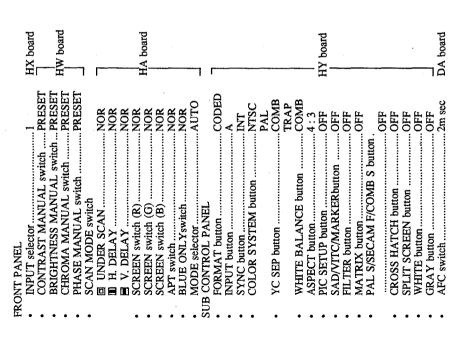
- Tum RV1 on the PA Board for a maximum reading on the electrostatic voltmeter. (Fully clockwise)
  - Confirm that the indicated value on the electrostatic voltmeter is 27.40kV  $\pm$  0.1kV at this time.
- If step 3 is not satisfied, select the value of R124 and R126 (1/4W metal-film) and repeat above steps 2 through 4. After confirmation, adjust RV1 for 27.0kV  $\pm$  0.1 kV on the s,

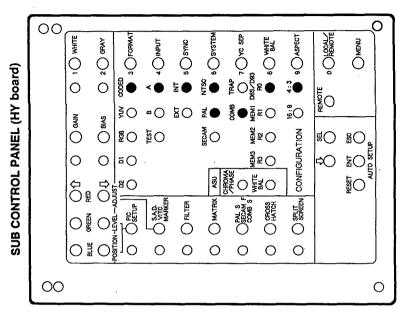
electrostatic voltmeter.

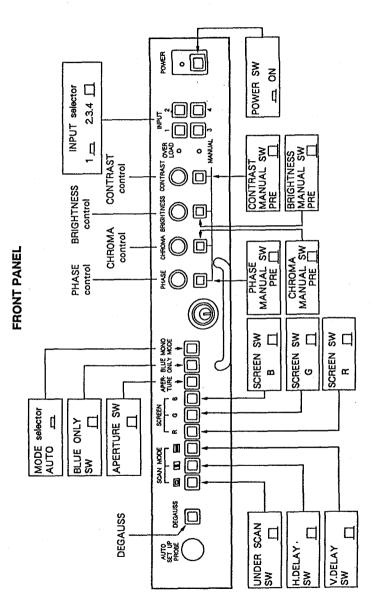
- In case of using a digital multimeter
  Receive a color bar signal and set CONTRAST and
  BRIGHTNESS controls to preset position. (manual switch is
  - Connect the digital multimeter to Pin @ of IC4 and TP4 (GND) on PA board. out 🗆 ) 7
- Set RV1 on PA board to its mechanical center. Select resistance values for R124 and R126 which provide a voltage reading of 8.75V  $\pm$  0.1V at Pin 3 of IC4 and ю. 4;

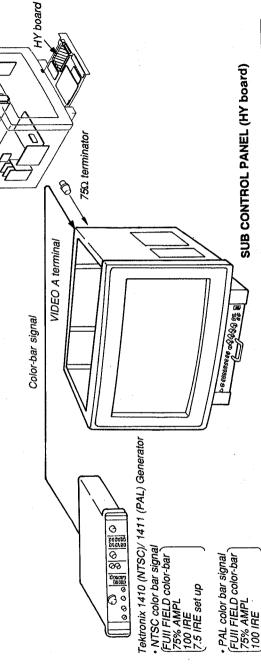
## 4-7. CIRCUIT ADJUSTMENTS

• To make the following adjustments, unless otherwise specified, the controls knobs and switches shall be preset as described below.

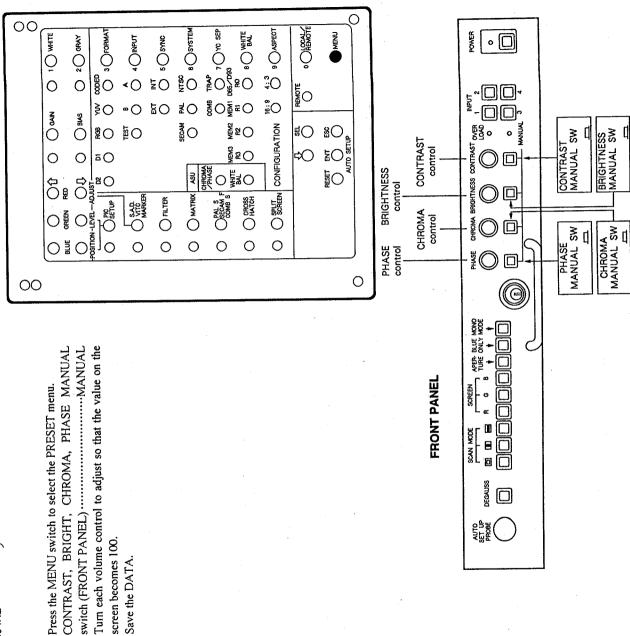




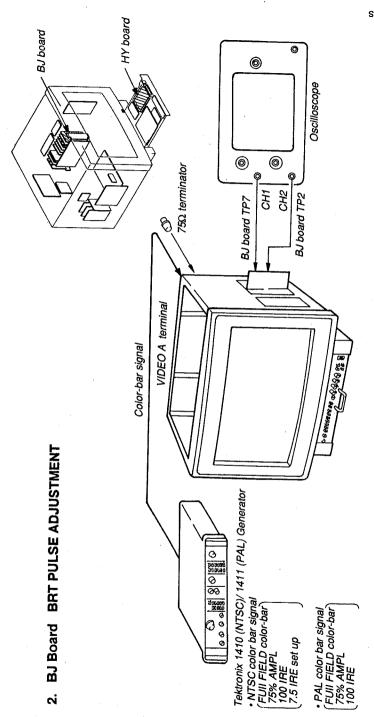




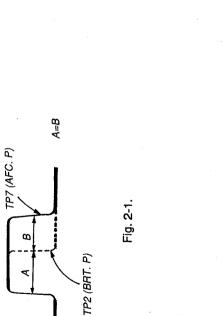
- Turn each volume control to adjust so that the value on the screen becomes 100.  $\ddot{\omega}$
- Save the DATA. 4

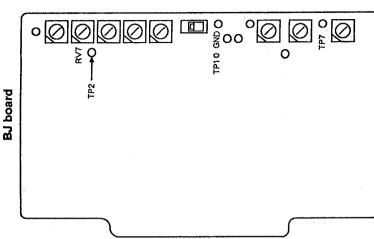


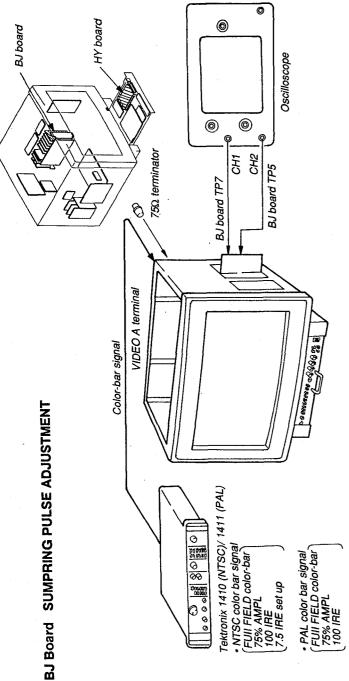
4-20(E)



- Input a color-bar signal to VIDEO A terminal of the set. 1.
- Connect an oscilloscope (CH1 probe) to the TP7 of BJ board and oscilloscope (CH2 probe) to the TP2 of BJ board. Adjust RV7 to obtain the waveform on the oscilloscope as shown in Fig. 2-1. ε.



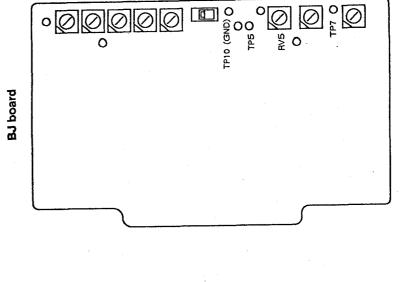


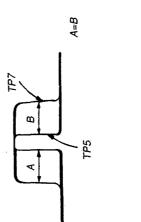


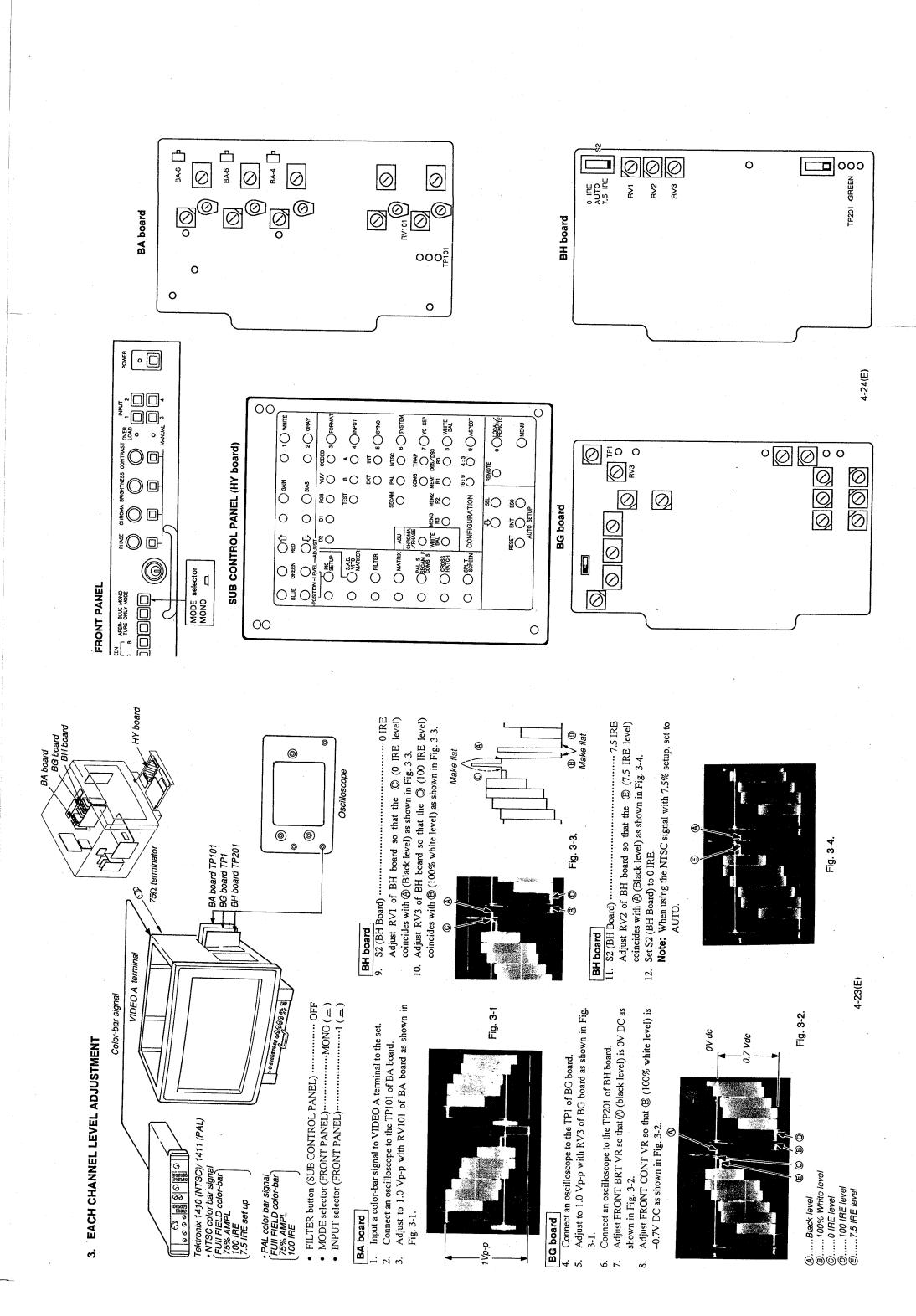
- Input a color-bar signal to VIDEO A terminal of the set. Connect an oscilloscope (CH1 probe) to the TP7 of BJ board and connect an oscilloscope (CH2 probe) to the TP5 of BJ - 2

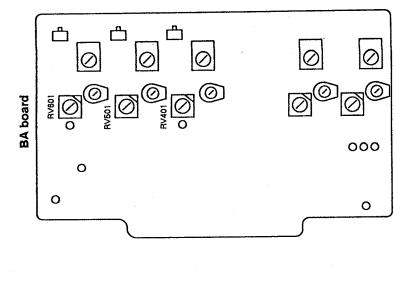
4. ADJUSTMENTS

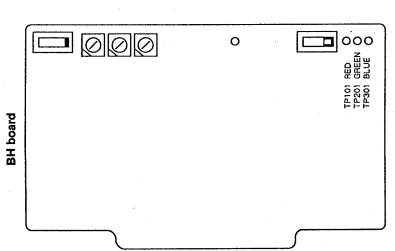
Adjust RV5 to obtain the waveform on the oscilloscope as shown in Fig. 2-2. board. છ



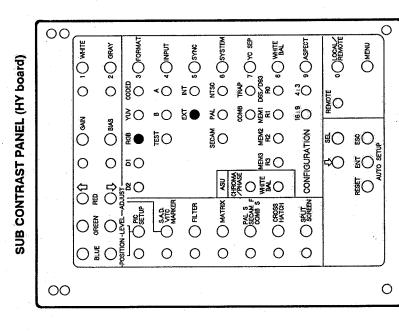


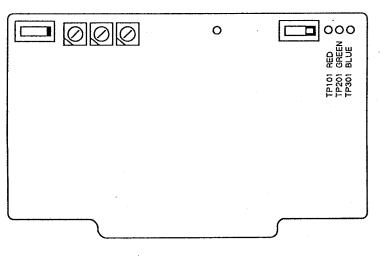






BA board





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Tektronix 1410 (NTSC)/ 1411 (PAL)
NTSC color bar signal
FUII FIELD color-bar
75% AMPL
100 IRE
7.5 IRE set up

• PAL color bar signal FUII FIELD color-bar 75% AMPL 100 IRE

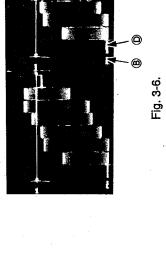
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QB board

RGB color-bar signal

COMP SYNC signal

BA board
13. Complete the connection as shown in Fig. 3-5.
SYNC buttons (SUB CONTROL PANEL)....... EXT
FORMAT button (SUB CONTROL PANEL).....RGB



Connect an oscilloscope to TP101 of BH board.
Adjust RV601 of BA board so that the @ (100 IRE level) coincides with @ (100% white level) as shown in Fig. 3-6.

Oscilloscopi

Fig. 3-5.

Adjust RV401 of BA board so that the (100 IRE level coincides with (100% white level) as shown in Fig. 3-6.

Connect an oscilloscope to TP101 of BH board.

14. 15.

Adjust RV501 of BA board so that the (100 IRE level

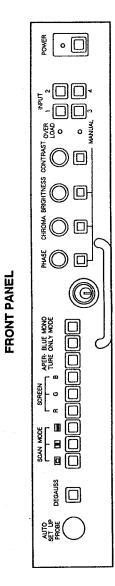
Connect an oscilloscope to TP201 of BH board.

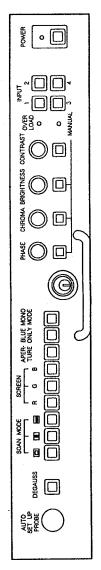
16. 17.

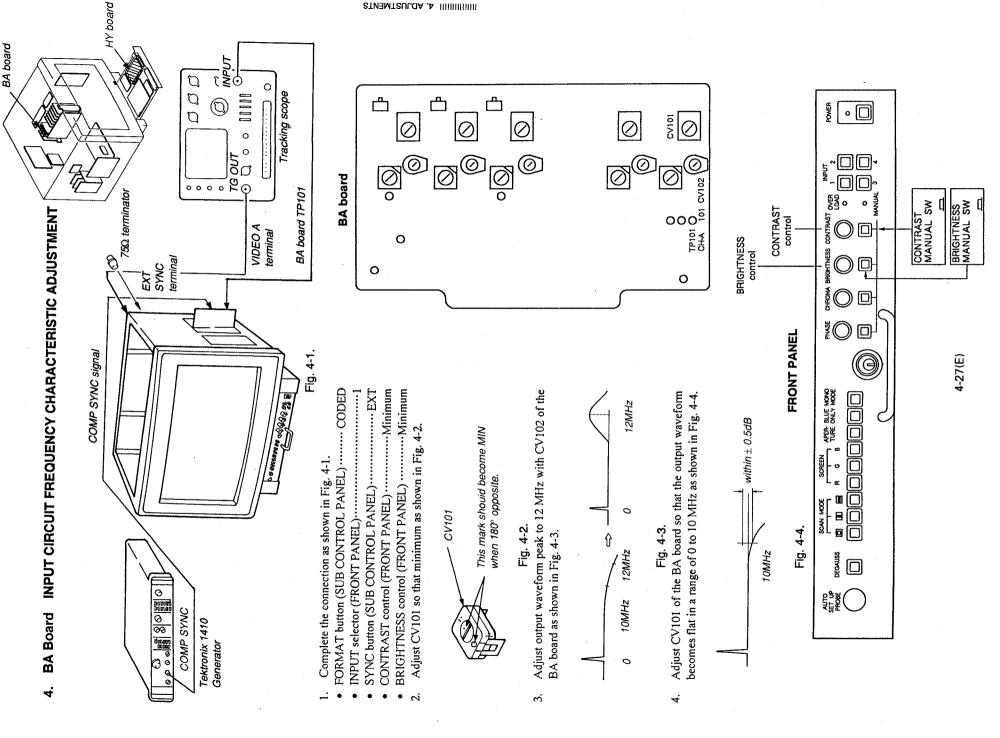
coincides with (100% white level) as shown in Fig. 3-6.

**@** 

BH board TP101 TP201 TP301



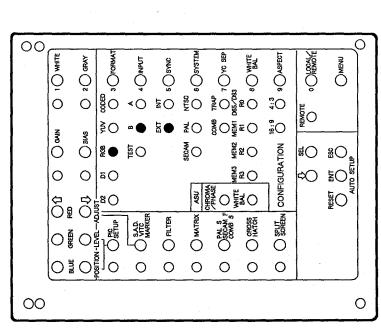




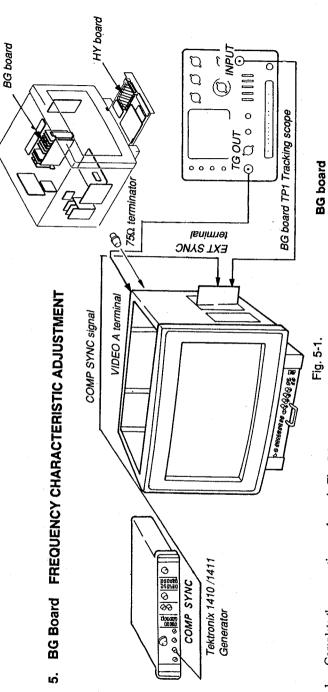
5. In the same way, perform the adjustment for 2 CH, under the following conditions.

			-		
CV (BA board)	(nunca : izi)	CV201, 202	CV401, 402	CV501, 502	CV601, 602
TP (BA	board)	TP201	TP401	TP501	TP601
FORMAT button	(OL PANEL)	CODED	RGB	RGB	RGB
INPUT button	(SUB CONTROL PANEL)	В			
INPUT		В	R/R-Y	G/Y/TEST	B/B-Y

SUB CONTRAST PANEL (HY board)



0



- Complete the connection as shown in Fig. 5-1.

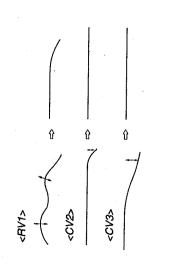
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- BRIGHTNESS control .......Minimum
- - Waveform movement by RV1, CV2, CV3

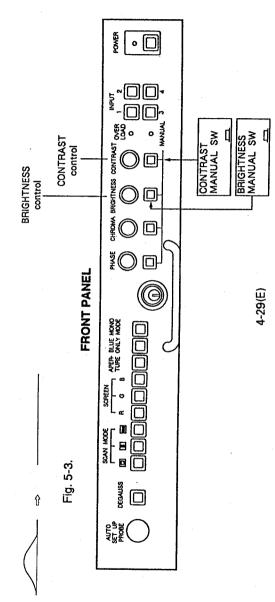


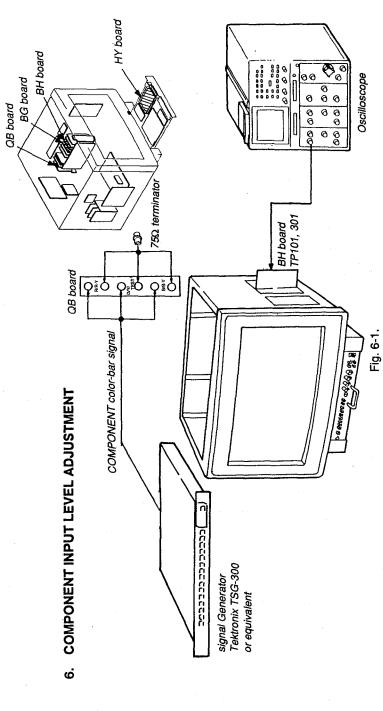
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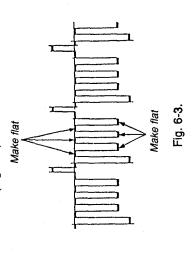
Fig. 5-2.

3. Adjust with RV2 (BG board) to the position in which the APT (Fig. 5-3.) begins to become effective.



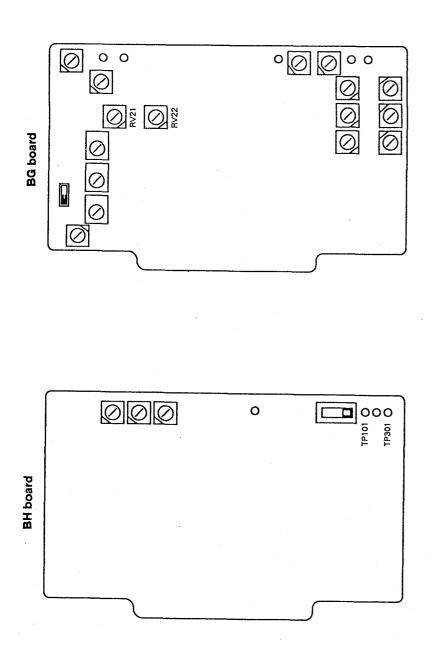


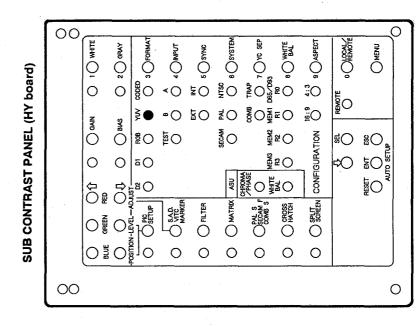
- Complete the connections as shown in Fig. 6-1.
   FORMAT button (SUB CONTROL PANEL) ...... YUV
  - 3 %
- Connect an oscilloscope to the TP101 of BH board. Adjust RV21 of BG board so that the output waveform becomes flat. (Fig. 6-2.)
- Connect an oscilloscope to the TP301 of BH board. Adjust RV22 of BG board so that the input waveform becomes flat. (Fig. 6-3.) Ś



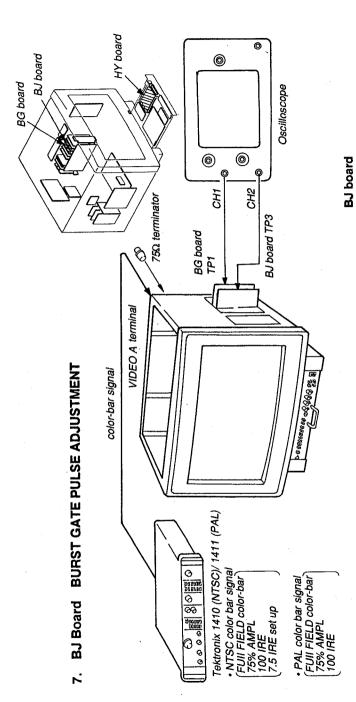
Make flat Make flat

Fig. 6-2.

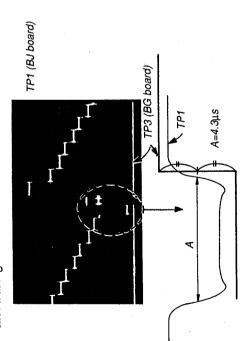




4-31(E)



- Input a color-bar signal to the VIDEO A terminal of the set. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP3 of BJ board.
  - Adjust RV8 of BJ board so that the with A width is 4.3  $\mu$ s as shown in Fig. 7-1.  $\omega$



**□°**。°∅

 $^{\circ}$ 

\* Adjust (A), from SYNC fall to B.G.P. (BURST GATE PULSE) rise, to 4.3 µs.

Fig. 7-1.

<u>, °</u> °

**BG** board

Adjust RV4 of BJ board so that the burst gate pulse width is 3.9  $\mu s$  as shown in Fig. 7-2.

4.

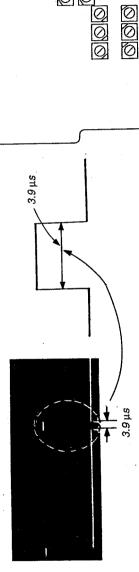
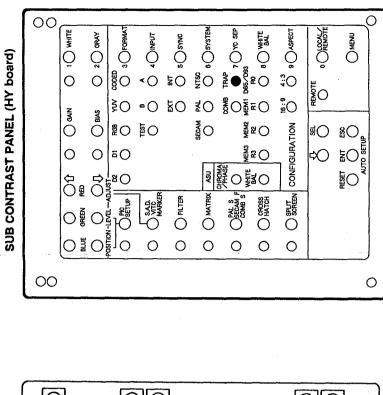


Fig. 7-2.

4-32(E)





BG board TP2

Destroyed Section of the Control of

Tektronix 1410 Generator

terminal

VIDEO A

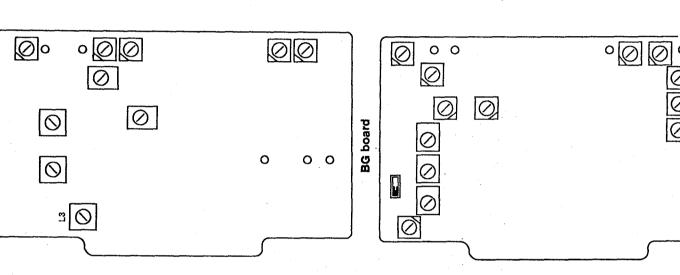
SWEEP signal

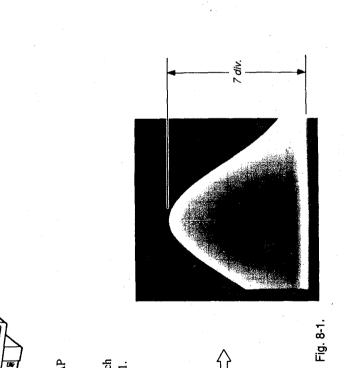
BC Board BPF ADJUSTMENT (BVM-2811 ONLY)

ထ

**BC** board

BC board





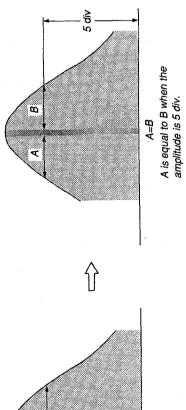
YC SEP button (SUB CONTROL PANEL).......TRAP
Input SWEEP signal to the VIDEO A terminal of the set.
Connect an oscilloscope to the TP2 on the BG board.
Make the V/dw of oscilloscope into VARIABLE, and match

the upper section of waveform to 7 div as shown in Fig. 8-1.

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Adjust L3 on the BC board so that A is equal to B as shown in Fig. 8-2.

4.

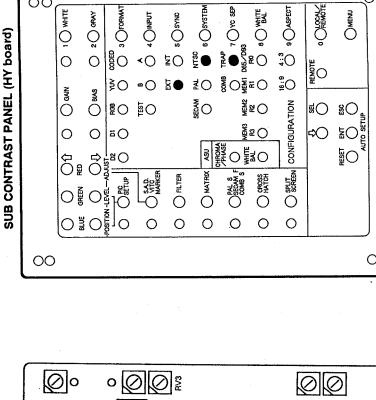


8



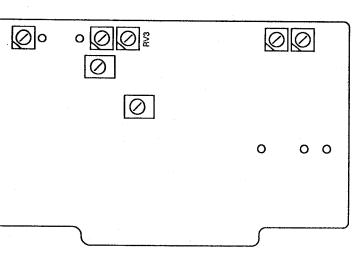
Fig. 8-2.

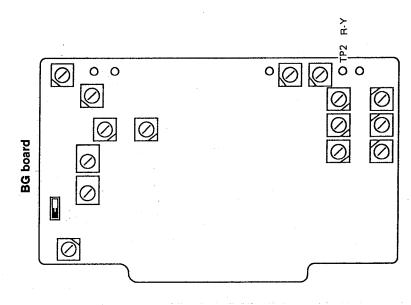
4-33(E)

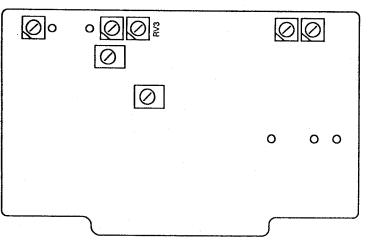


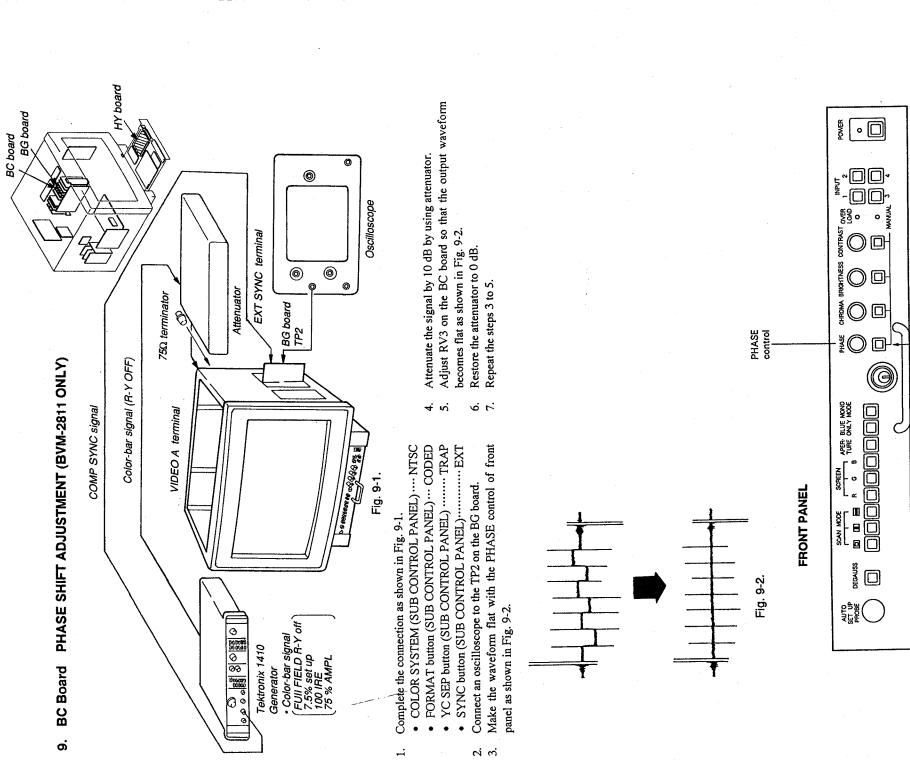
00

BC board



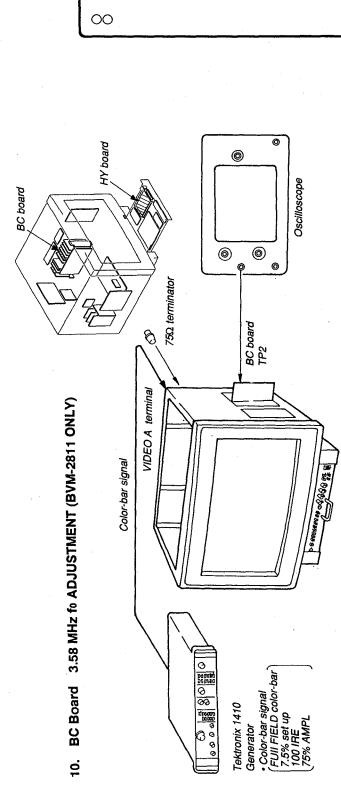






PHASE MANUAL SW

4-35(E)



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BLUE OREEN REF

SUB CONTRAST PANEL (HY board)

YC SEP button (SUB CONTROL PANEL)......TRAP
Input color-bar signal to the VIDEO A terminal of the set.
Connect an oscilloscope to the TP2 of BC board.
Short-circuit between TP6 and TP7 of BC board with a

RESET ENT ESC AUTO SETUP

O GROSS

O SECAM

O MATTRIX

O O PILTER

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Adjust CV2 of BC board so that the output waveform is shifted slowly as shown in Fig. 10-1. jumper wire. 4.

Turn off the power of this monitor, and disconnect TP6 and TP7 of BC board.

Š.

TP2 on the BC board

0 0 **O**0 80 7.72 R-Y OUT O

00 BC board O 0 0 0 0 0

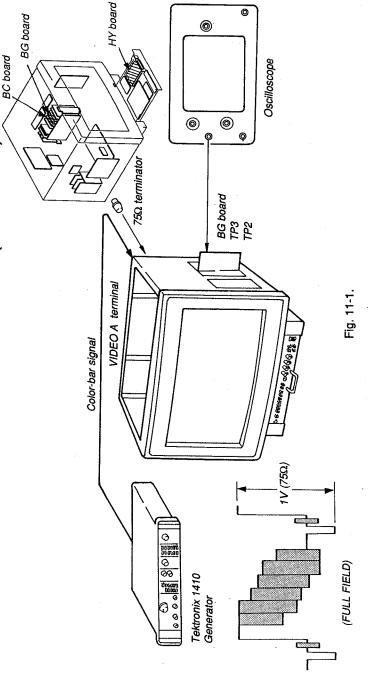
Adjust the output waveform to be shifted slowly as if it stop.

Fig. 10-1.

P3 B-Y

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# 11. BC Board COLOR DIFFERENCE PHASE ADJUSTMENT (BVM-2811 ONLY)



- YC SEP button (SUB CONTROL PANEL)......TRAP 1. Complete the connections as shown in Fig. 11-1.

  - Turn on the power of this monitor.

### B-Y System Adjustment

- ĸ.
- Connect the oscilloscope probe to TP3 on the BG board, and turn off the (B-Y) signal of the signal generator. Set the oscilloscope sensitivity to 20 mV/DIV, and adjust RV2 on the BC board so that the output waveform is flat. (See Fig. 11-2.) 4.

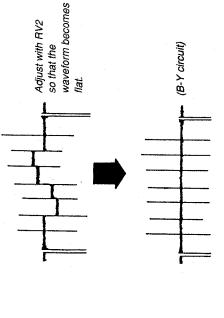


Fig. 11-2.

### **Quad Adjustment**

- 5. Connect the oscilloscope probe to TP2 on the BG board. Turn on the B-Y signal of the signal generator, and turn off the (R-Y) signal. Then adjust CV1 on the BC board so that the output waveform is flat. (See Fig. 11-3.)
  - Repeat the steps 3 to 6.

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BC board

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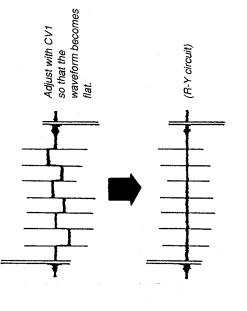
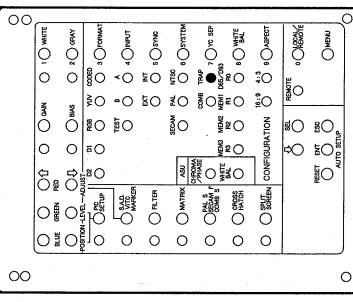


Fig. 11-3.

## SUB CONTRAST PANEL (HY board)

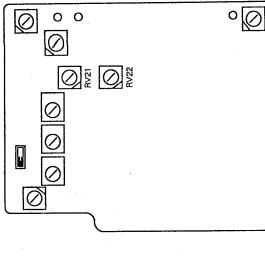


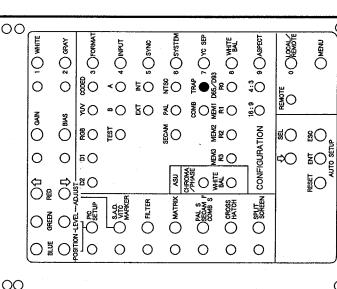


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0 0

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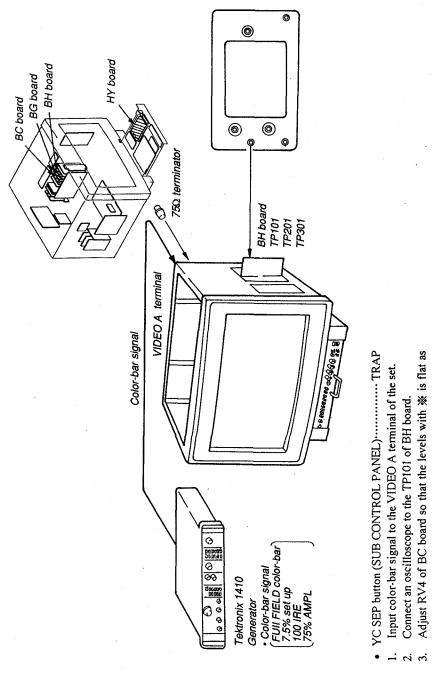




# 12. BC Board COLOR DIFFERENCE LEVEL ADJUSTMENT (BVM-2811 ONLY)

Connect an oscilloscope to the TP201 of BH board. Adjust RV4 and RV5 of BG board so that the INPUT waveform becomes flat as shown in Fig. 12-3.

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- shown in Fig. 12-1.

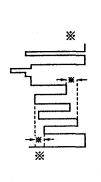


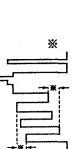
Adjust with levels with % to be flat respectively using RV4 of BC board.

TP101 R OUT

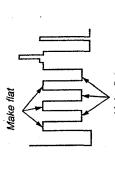
Fig. 12-1.

- Connect an oscilloscope to the TP301 of BH board. Adjust RV5 of BC board so that the output waveform as shown in Fig. 12-2. 4. 2.





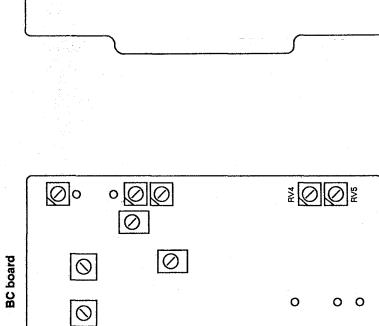
. TP301 B OUT

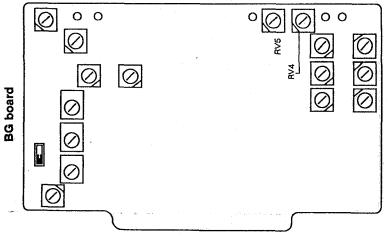


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Fig. 12-2.

4-41(E)





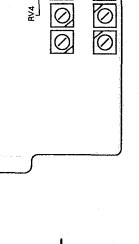
 $\hat{\mathbf{f}}$ 

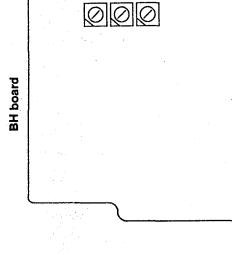
TP201 G OUT

 $\hat{U}$ 

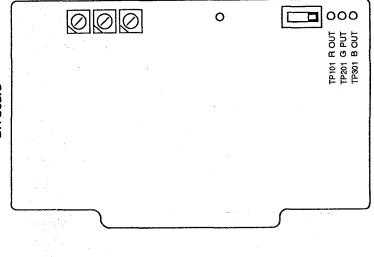
RV5 1

Fig. 12-3.

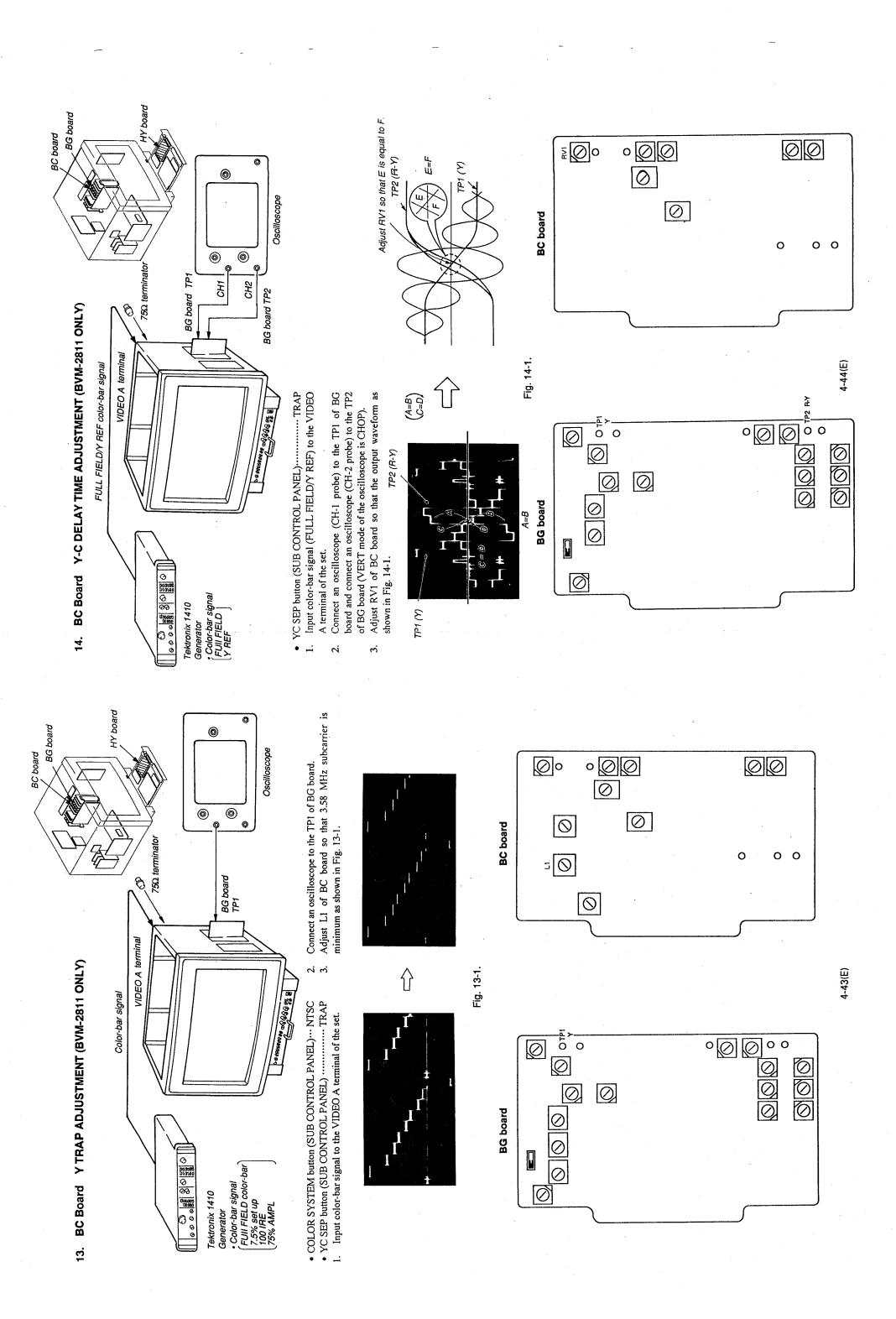


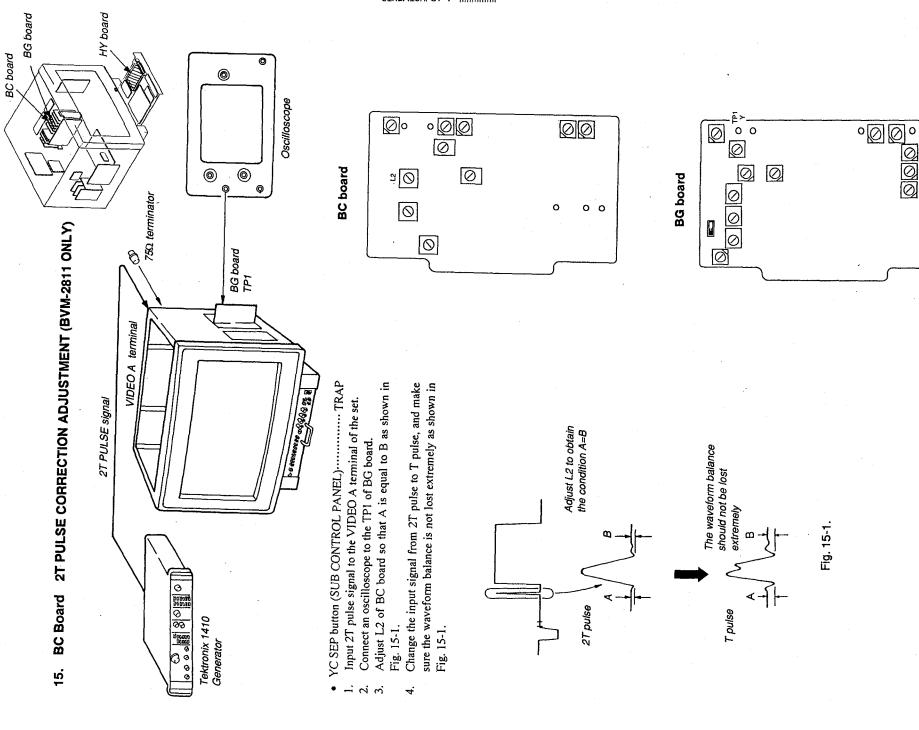


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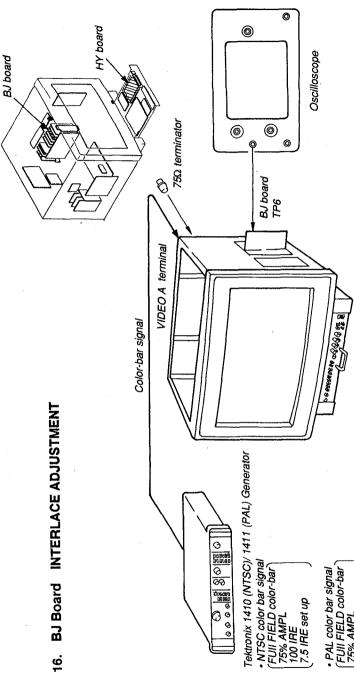


4-42(E)





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STNEMTSULGA .4 ||||||||

- 3. 5.
- YC SEP button (SUB CONTROL PANEL)........TRAP Input color-bar signal to the VIDEO A terminal of the set.
  Con 'ct an oscilloscope to the TP6 on the BG board.
  Adjust RV6 to obtain the waveform on the oscilloscope as shown in Fig. 16-1.

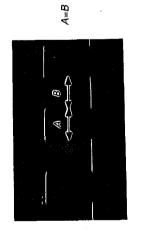
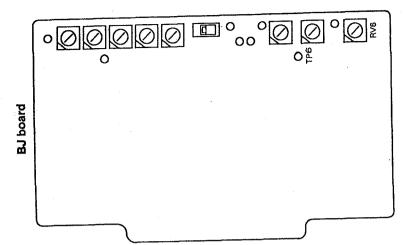
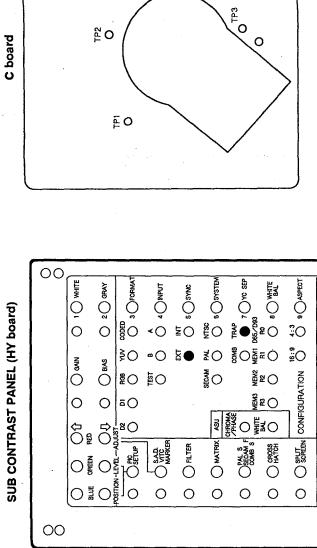
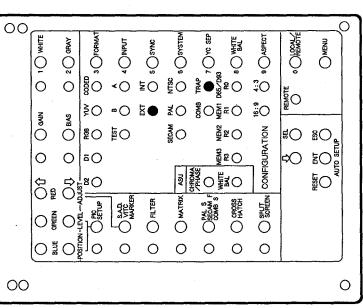


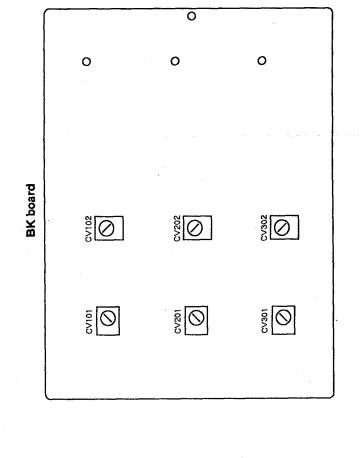
Fig. 16-1.

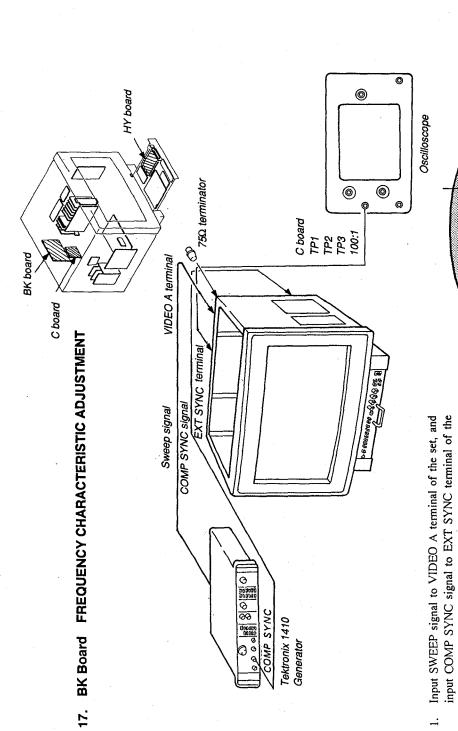


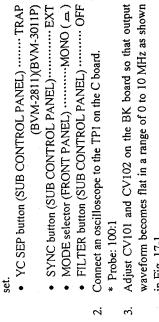


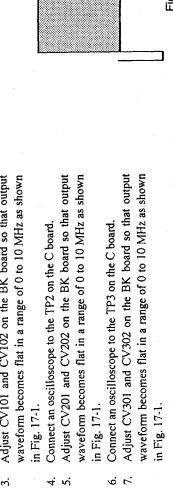




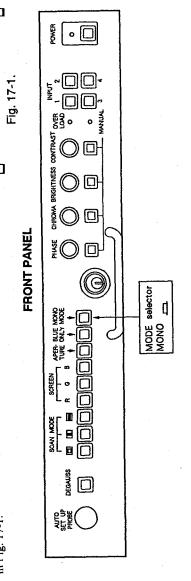








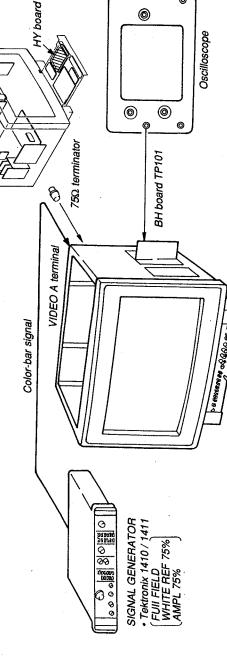
10MHz





BT board ★ BH board

# 18-1. BT Board Partial Adjustment



# Luminance Level Adjustment

- 1. Feed a color bar signal to VIDEO A INPUT terminal of thi
- Set the YC SEP button on the sub control panel to TRAF ri
  - Connect the oscilloscope to TP101 (R OUT) on the BF position. ઌ૽
- board. (DC 0.1 V/div:H)

  Tum the POSITION control of the oscilloscope to set the portion A (white) of Fig. 18-1 to the center of the
- 5

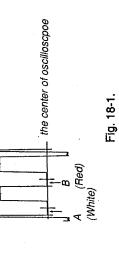
oscilloscope.

Set the YC SEP button on the sub control panel to the COMB position. Set the PAL S/SECAM F/COMB S button on the sub-

9

control panel to the ON.
Set the portion A (white) of Fig. 18-1 to the center of the oscilloscope using RV3 (luminance level) on the BT board.

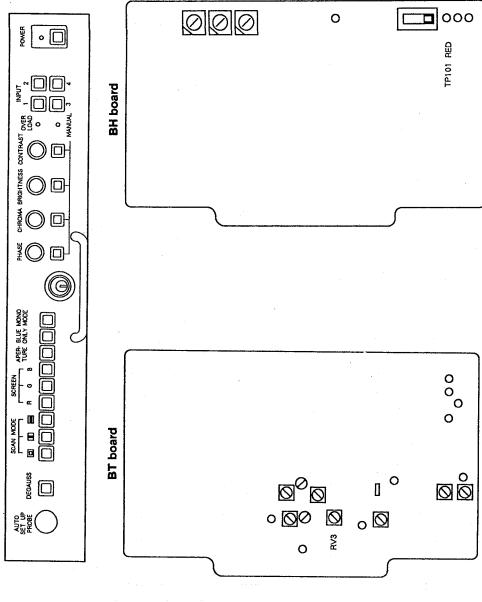
- Feed a color bar signal to VIDEO A INPUT terminal of this Chroma Level Adjustment
  1. Feed a color bar signal to
- Set the YC SEP button on the sub control panel to the TRAP
- Connect the oscilloscope to TP101 on the BH board. (DC 0.1 V/div:H)
  - Turn the POSITION control of the oscilloscope to set the portion A (white) of Fig. 18-1 to the center of the
- Set the YC SEP button to the COMB position.
  Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
- Set the portion B (red) of Fig. 18-1 to the center of the oscilloscope using RV8 (chroma level) on the BT board.



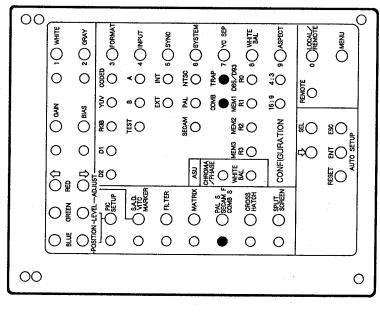
Note: Never attempt to turn the following parts as these cannot be easily adjusted.

FL1, FL2, FL3, DL3, DL5, DL6, DL8

### FRONT PANEL



SUB CONTROL PANEL (HY board)



4-50(E)



# 18-2-1. BT Board Luminance Level Adjustment

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MANUAL

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SET UP PROBE

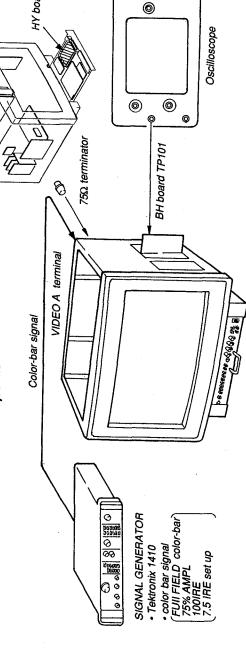
SCREEN APER BLUE MONO R G B TURE ONLY MODE

FRONT PANEL

**BT** board

**BH** board

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- Feed a color bar signal to VIDEO A INPUT terminal of this
- Set the YC SEP button on the sub control panel to the TRAP
- Connect the oscilloscope to TP101 (R OUT) on the BH

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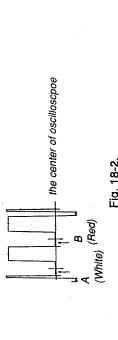
**©**to <sup>№</sup>

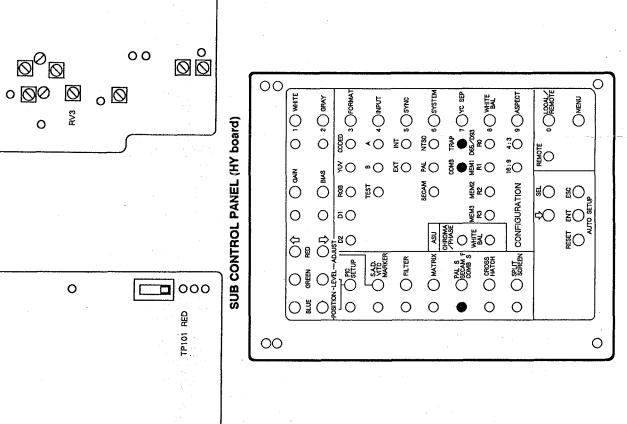
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- board (DC 0.1 V/div:H)

  Turn the POSITION control of the oscilloscope until the portion A (white) of Fig. 18-2 is set to the center of the
- Set the YC SEP button to the COMB position. Set the PAL S/SECAM F/COMB S button on the sub
- control panel to the ON. 5.
- Set the portion A (white) of Fig. 18-2 to the center of the oscilloscope using RV3 (luminance level) on the BT board. ۲.
  - Set the PAL S/SECAM F/COMB S button to the OFF.
- Set the portion A (white) of Fig. 18-2 to the center of the oscilloscope using RV9 (1H luminance level) on the BT





4-51(E)



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SCAN MODE SOFFEEN APER BLUE MONOR TO THE ONLY MODE

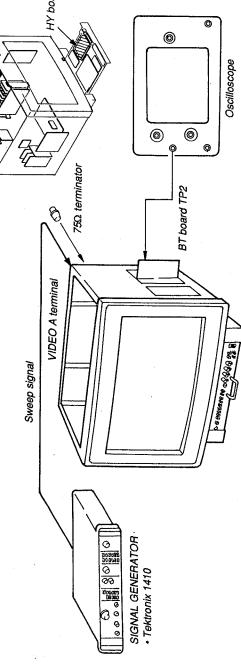
DEGALUSS DEGALUSS

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SCREEN APER BLUE MONO

FRONT PANEL

CONTRAST OVER 



- Feed a sweep signal to the VIDEO A INPUT terminal of
  - this set. Set the YC SEP button on the sub control panel to the 5.
    - COMB position.

ε.

- Connect the oscilloscope to TP2 on the BT board. (AC 0.1 V/div:V) Set CV5 to the position as shown in Fig. 18-3. Set the PAL S/SECAM F/COMB S button on the sub 4. 2.
  - Adjust the frequency characteristics until it is made flat using CV1 (Y FREQ) on the BT board. If it cannot be properly adjusted by using CV1, use CV5 (Y FREQ). control panel to the ON. 9
    - Adjust the frequency characteristics until it is made flat Set the PAL S/SECAM F/COMB S button to the OFF. ۰. % %
      - using CV2 (1H Y FREQ) on the BT board.
- Set CV3 (CLK PHASE) and CV4 (CLK PHASE) on the BT 10. 6.
- board to the position as shown in Fig. 18-4.
  Adjust the clock phase until it becomes just as shown in Fig. 18-5 using CV3.
  If it cannot be adjusted with CV3, adjust with CV4 by returning CV3 to the position of Fig. 18-4.

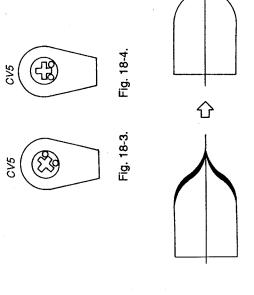


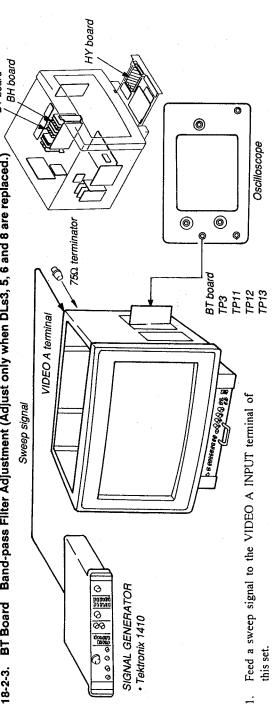
Fig. 18-5.

SUB CONTROL PANEL (HY board)

oard	0 0 % %	0000
BT board		\$ ©

O 1 O WHITE	O 2 ORAY	сорер Э О Говмат	A OINPUT	INT 5 SYNC	NTSC 6 SYSTEM	TRAP  7 Ovc SEP	8 WHITE	4:3 9 ASPECT	ote oOLocal	MENU	0
Ogain	BIAS	<b>₽</b> O	₽ ₽ •	80	SECAM PAL	Som MEM ● MB	۳O	NO Sign	SEL REMOTE	<u></u>	
0	0	۵O	-			MEM3	≅O	 NFIGURATI	<b>\$</b> ○	F OF SET	
		ETUP B	S.A.D. VITC MARKER	) FILTER	MATRIX ASU	PAL S PHASE SECAM F OOMB S WHITE	O HATCH	SPLIT CONFIGURATION		RESET	
		SETUP BE	0	Ŏ O	Ó O		Ö	Ö			
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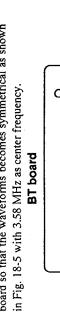


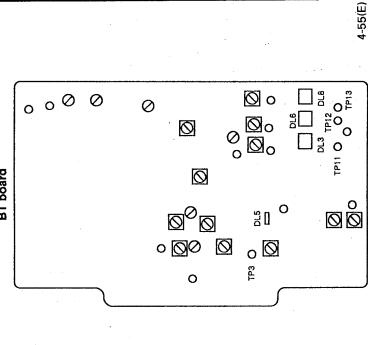


- Feed a sweep signal to the VIDEO A INPUT terminal of
- Set the PAL S/SECAM F/COMB S button on the front

A=B

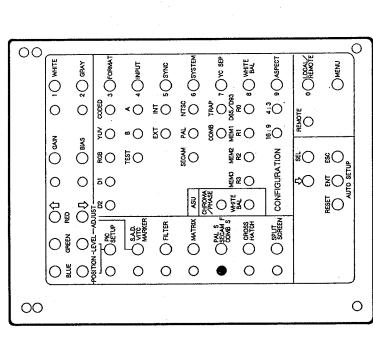
- Adjust the frequency characteristics using DL3 on the BT board so that the waveform becomes symmetrical as shown in Fig. 18-5 with 3.58 MHz as center frequency. panel to the ON. Connect the oscilloscope to TP11. €. 4. ć,
- Adjust the frequency characteristics using DL6 on the BT board so that the waveform becomes symmetrical as shown in Fig. 18-5 with 3.58 MHz as center frequency. Connect the oscilloscope to TP12. 9.
- Adjust the frequency characteristics using DL8 on the BT Connect the oscilloscope to TP13. . ∞ ب
  - board so that the waveforms becomes symmetrical as shown in Fig. 18-5 with 3.58 MHz as center frequency. Connect the oscilloscope to TP3. 9.
- Adjust the frequency characteristics using DL5 on the BT board so that the waveforms becomes symmetrical as shown

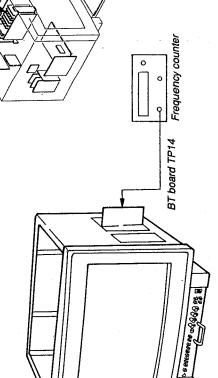




# SUB CONTROL PANEL (HY board)

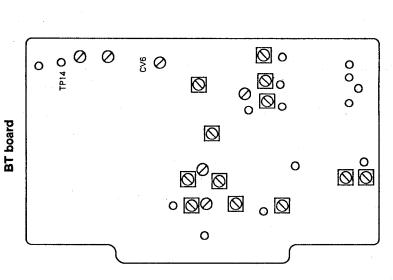
Fig. 18-6.

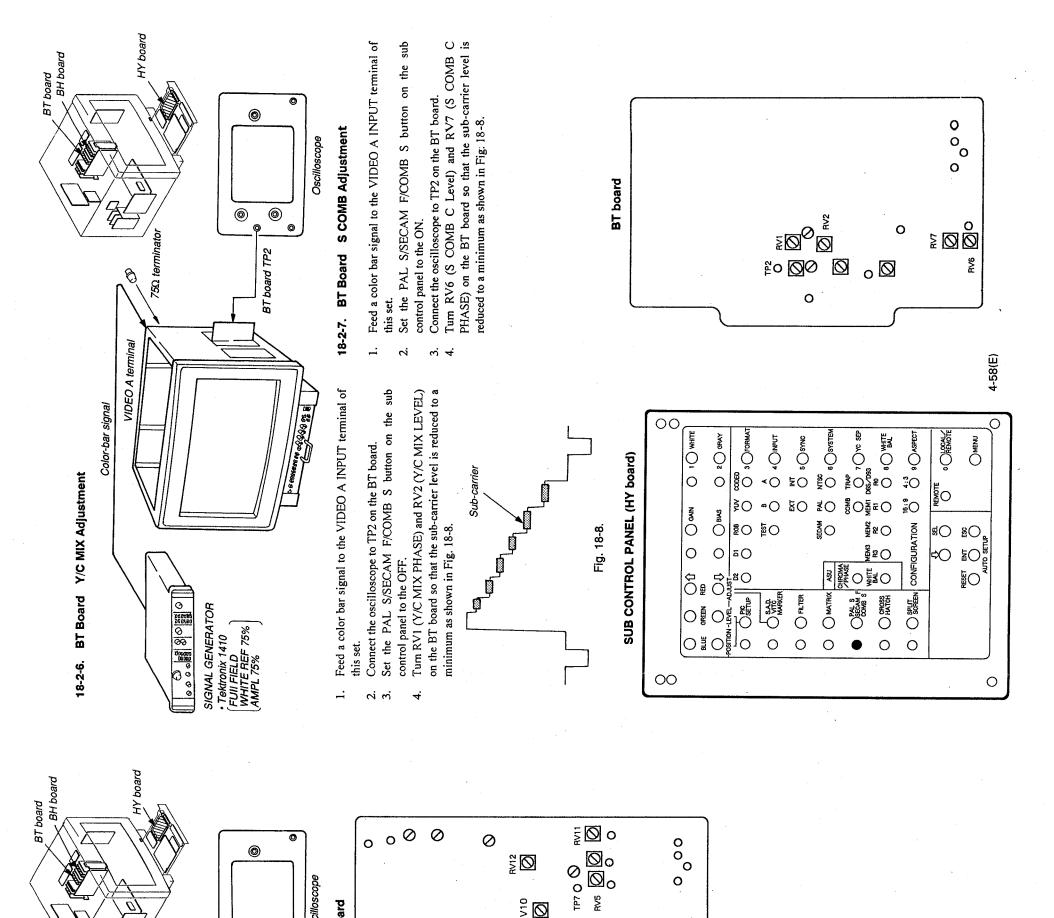




- Connect the frequency counter to TP14.

  Make adjustment as shown below using CV6 (CLK FREQ) on the BT board. 2.
  - fo=21.477 MHz





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Enlarged view of inverted signal section

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Oscilloscope

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BT board TP6 TP7

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SIGNAL GENERATOR
• Tektronix 1410

750 terminator

B

VIDEO A terminal

Color bar (REVERSE) signal

18-2-5. BT Board 0H/1H, 1H/2H MIX Adjustment

**BT** board

Tum RV5 (0H/1H MIX LEVEL) and RV10 (0H/1H MIX

PHASE) on the BT board until the portion shown in Fig

Connect the oscilloscope to TP6 to magnify the signa

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Feed a color bar signal (REVERSE) to the VIDEO INPUT terminal of this set.

LEVEL) on the BT board until the portion shown in Fig.

18-7 is reduced to a minimum.

Tum RV102 (1H/2H MIX PHASE) and RV11 (1H/2H MIX

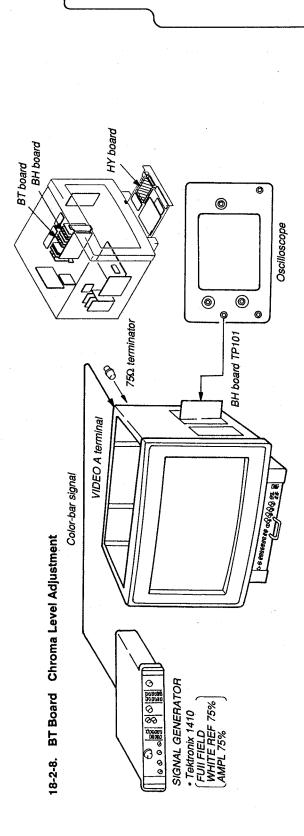
Connect the oscilloscope to TP7.

4. v.

18-7 is reduced to a minimum.

Fig. 18-7.





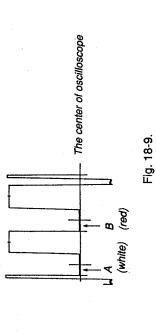
- Feed a color bar signal to the VIDEO A INPUT terminal of
- Set the YC SEP button on the sub control panel to the TRAP

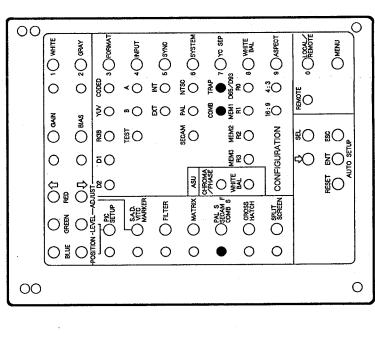
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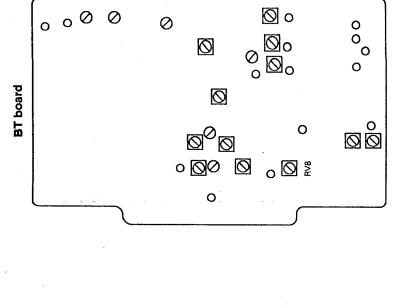
- Connect the oscilloscope to TP101 on the BH board. position.
- (DC 0.1 V/div:H) Turn the POSITION control of the oscilloscope to set the portion B (red) of Fig. 18-9 to the center of the oscilloscope. 4. ж.
  - Set the YC SEP button to the COMB position. Set the PAL S/SECAM F/COMB S button on the sub

6.5

- control panel to the ON. Set the portion B (red) of Fig. 18-9 to the center of the oscilloscope using RV8 (C OUTPUT LEVEL) on the BT





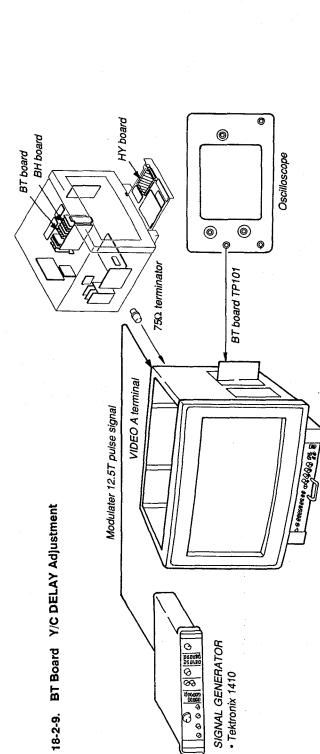


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TP101 RED



FRONT PANEL

- Feed a 12.5T pulse signal to the VIDEO A terminal of this
- 4 6 4

- Set the PAL S/SECAM F/COMB S button to the ON.

  Connect the oscilloscope to TP101 on the BH board.

  Turn the CHROMA MANUAL control (on the front panel) until the chroma signal is adjusted as shown in Fig. 18-10.

  After adjustment, turn RV4 (Y/C DELAY) on the BT board until the waveform is symmetrical. Š

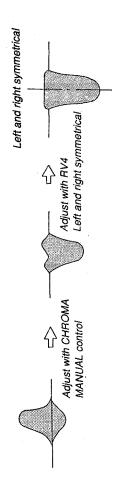
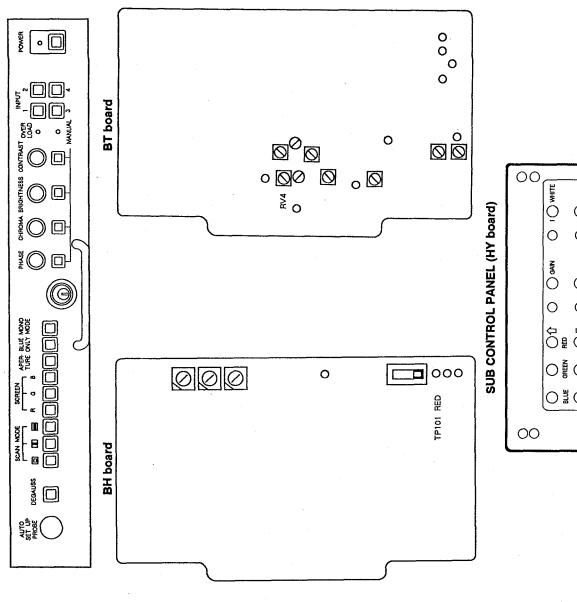
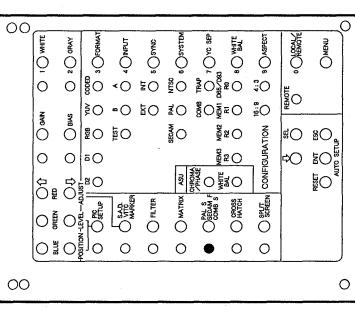
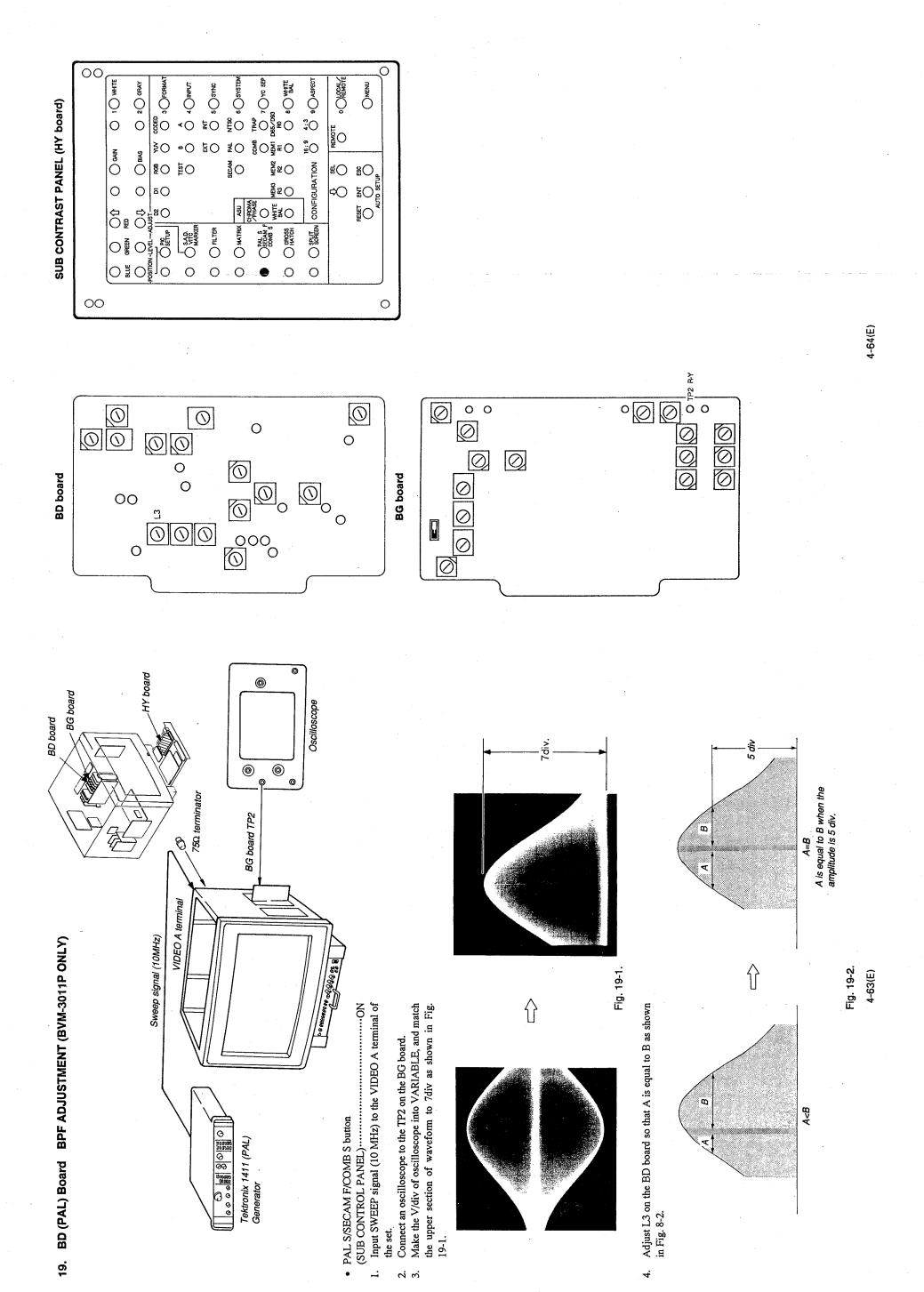
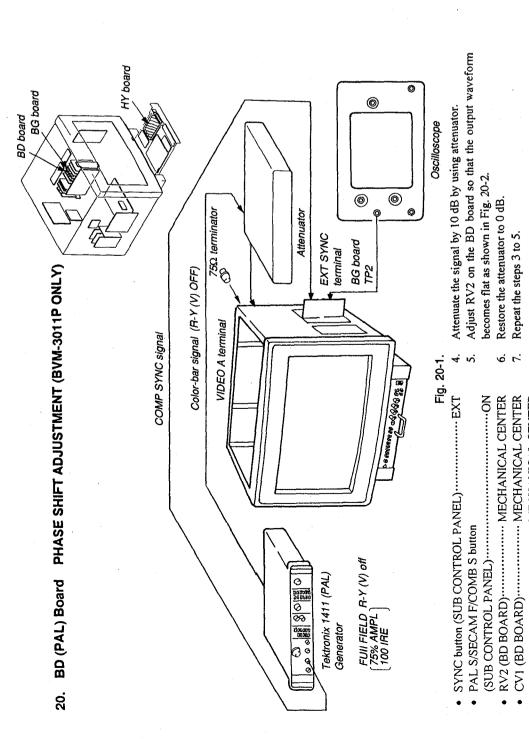


Fig. 18-10.









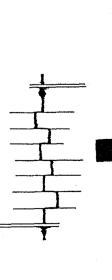
SYNC button (SUB CONTROL PANEL)-------EXT

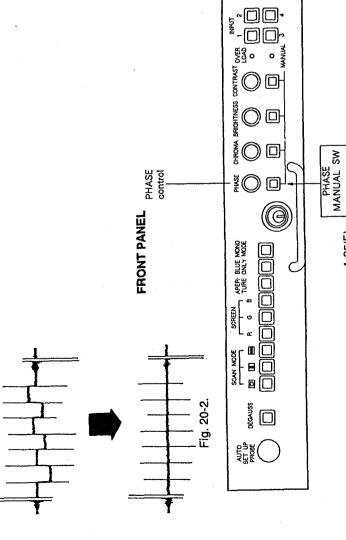
- (SUB CONTROL PANEL)-------ON PAL S/SECAM F/COMB S button
- CV2 (BD BOARD) ...... MECHANICAL CENTER

6.

- Complete the connection as shown in Fig. 20-1. Connect an oscilloscope to the TP2 on the BG board.
- Make the waveform flat with the PHASE control of front panel (R) as shown in Fig. 20-2. -i ~i ~i

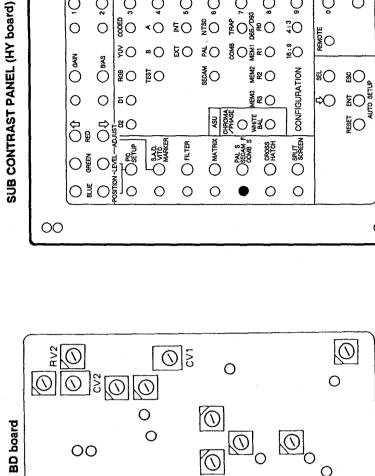






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O FILTER

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A CONPUT
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NTSC
O SYSTEM

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O PREMOTE

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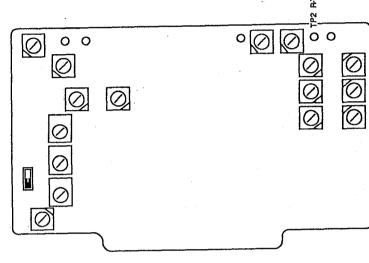
RESET ENT ESC

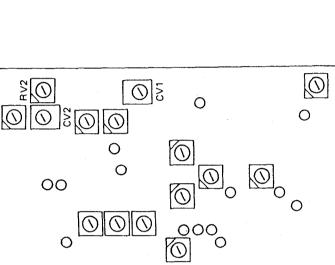
AUTO SETUP

4:3 9 ASPECT

CONFIGURATION

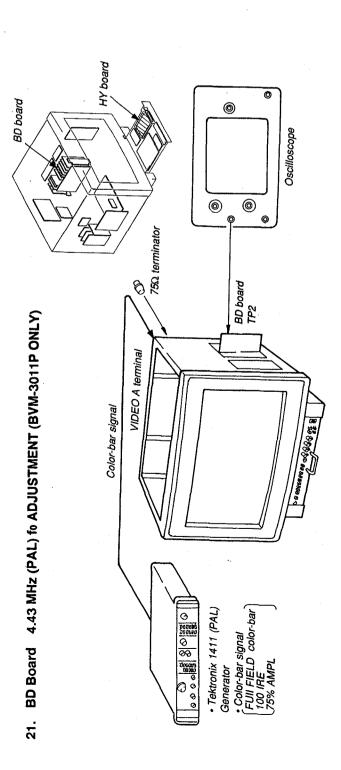
Series





	ard
	BG board

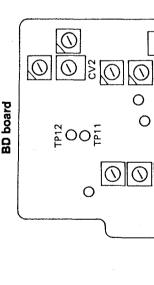
4-66(E)

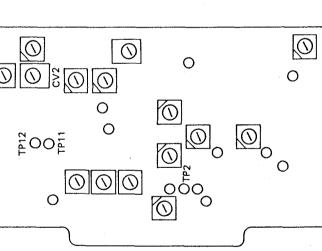


- 3. 2.
- Input color-bar signal to the VIDEO A terminal of the set. Connect an oscilloscope to the TP2 of BC board. Short-circuit between TP11, 12 of BD board with a jumper
- 4.
- Adjust CV2 of BD board so that the output waveform is shifted slowly as shown in Fig. 21-1.

  Turn off the power of this monitor, and disconnect TP11, 12 of BD board. 5.

TP2 on the BD board





Adjust the output waveform to be shifted slowly as if it stop.

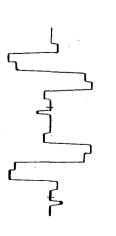
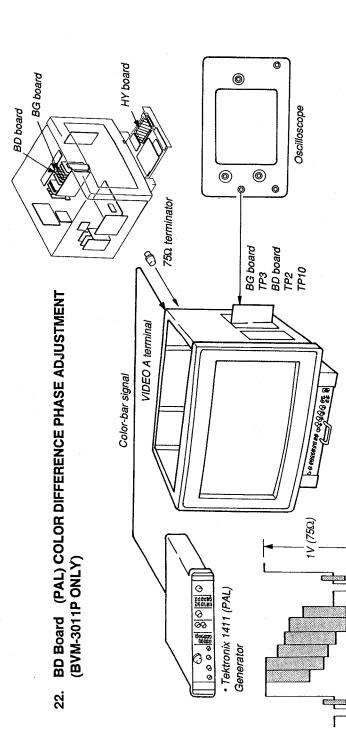


Fig. 21-1.

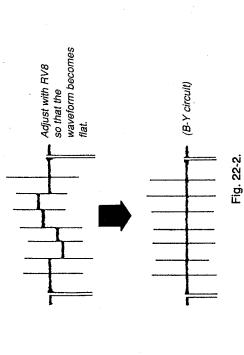


- Complete the connections as shown in Fig. 22-1.

  Turn on the power of this monitor. Set the INPUT switch to the 1 position, the SYNC switch to the INT position, and the PAL S/SECAM F/COMB S button to the ON.

## B-Y System Adjustment

- Connect the oscilloscope probe to TP3 on the BG board, and €.
- turn off the U (B-Y) signal of the signal generator. Set the oscilloscope sensitivity to 20 mV/DIV, and adjust RV8 on the BD board so that the output waveform is flat. 4.



# SUB CONTRAST PANEL (HY board)

Fig. 22-1.

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	1 WHITE	2 O GRAY	3 OFORMAT	4 OINPUT	5 SYNC	6 SYSTEM	7 Ove sep	8 WHITE	9 ASPECT	O CHEMOTE	OMENU	
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**Quad Adjustment** 

- on the U signal of the signal generator, and turn off the V (R-Y) signal. Then adjust CV1 on the BD board so that the output waveform is flat. (See Fig. 22-3.) Connect the oscilloscope probe to TP on the BD board. Turn Š.
  - Repeat the steps 3 to 6.

6.

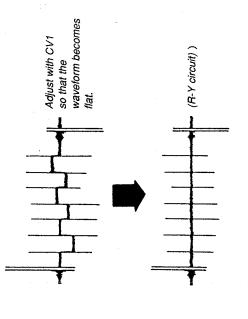
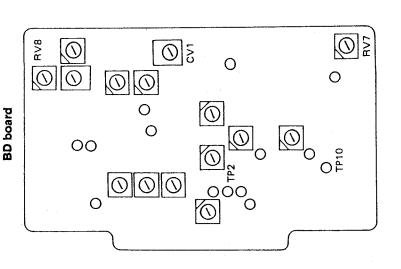


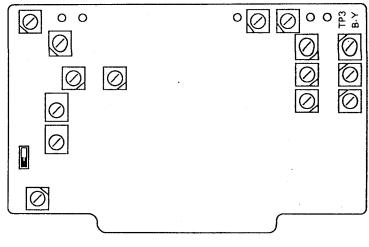
Fig. 22-3.

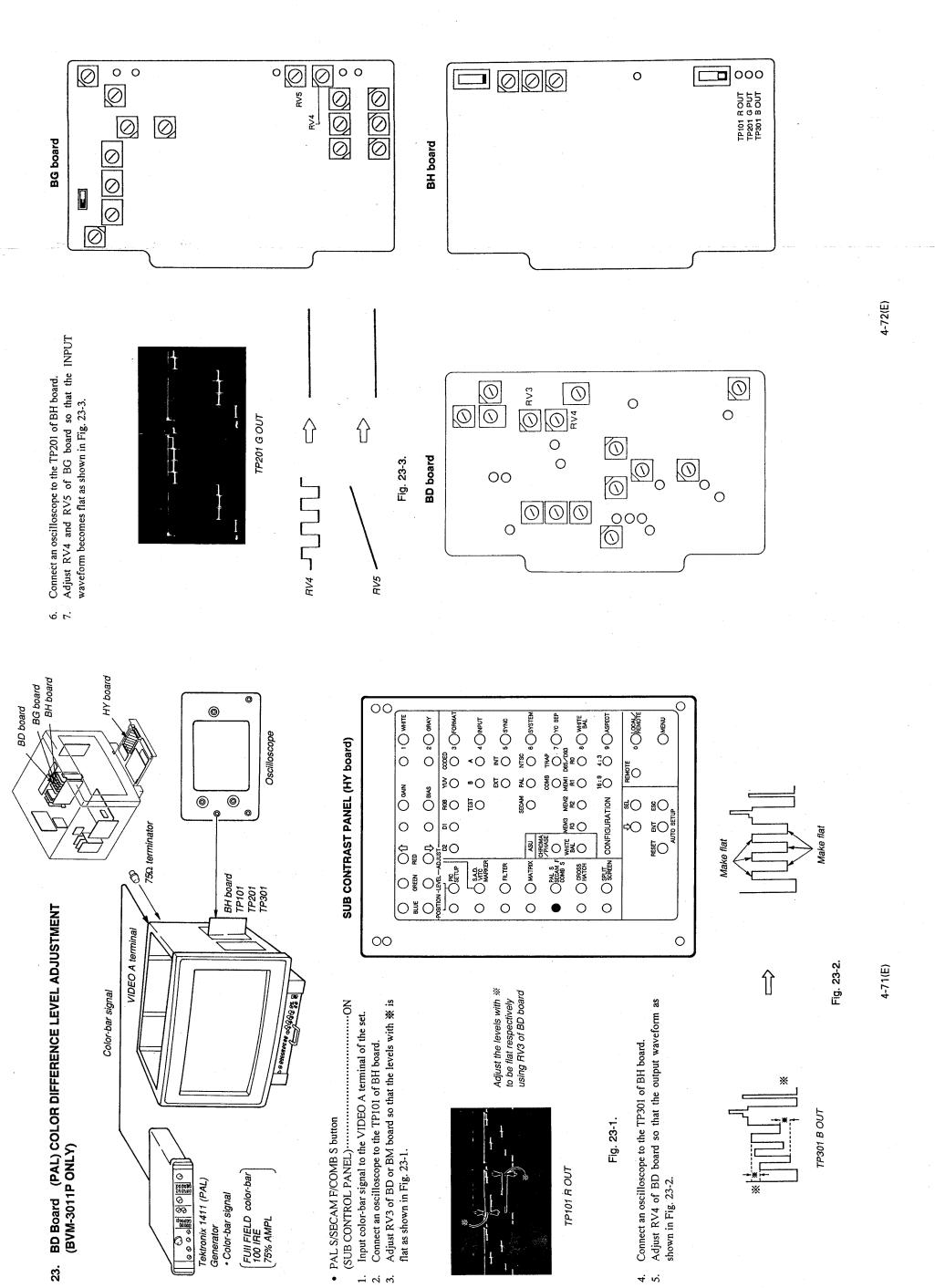
## PAL-D Phase Adjustment

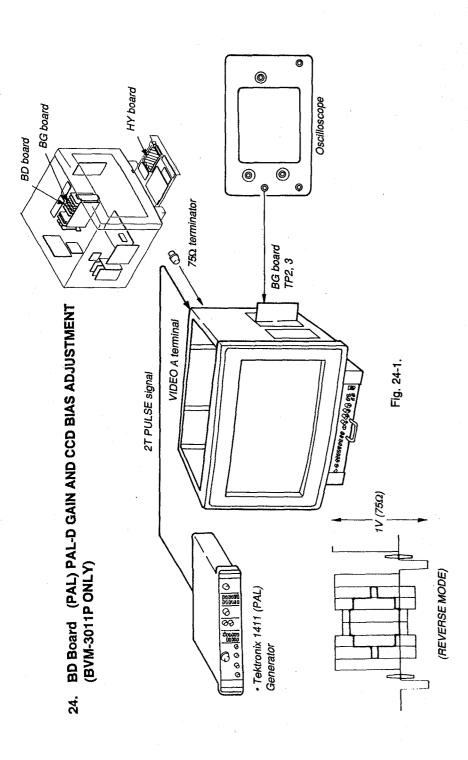
- Set the PAL S/SECAM F/COMB S button to the OFF and turn on the V signal of the signal generator, and turn off  $\boldsymbol{U}$
- Connect the oscilloscope probe to TP10 on the BD board.
- Adjust RV7 on the BD board so that the output waveform is flat. (See Fig. 22-2.) ∞ o.
  - Finally, perform the adjustments of 3 and 4 by directly mounting the BD board to the set, without using the extension board. 10.



**BG** board







PAL S/SECAM F/COMB S button
(SUB CONTROL PANEL)......OFF

TP2 on the BG board

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O S

**BD** board

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Complete the connection as shown in Fig. 24-1.

Turn on the power of this monitor. Set the INPUT switch to the 1 position, and the SYNC switch to the INT position.

Connect the oscilloscope probe to TP2 on the BG board.

Turn RV5 and RV6 on the BD board fully clockwise.

By observing the waveform shown in Fig. 24-2, adjust RV9 on the BD board so that it becomes A=B.

Adjust RV5 on the BD board so that the waveform shown in Fig. 24-2 becomes flat.

Connect the probe of the oscilloscope to TP3 on the BG board and observe the section shown in Fig. 24-3. Adjust RV10 on the BD board so that the waveform of the ø

oscilloscope becomes A=B. Adjust RV6 on the BD board so that the waveform shown in

Fig. 24-3 becomes flat.

Delayed B mode Adjust RV6 to be flat.

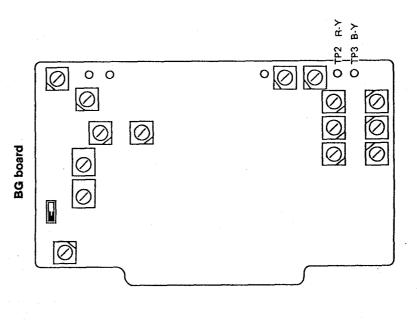
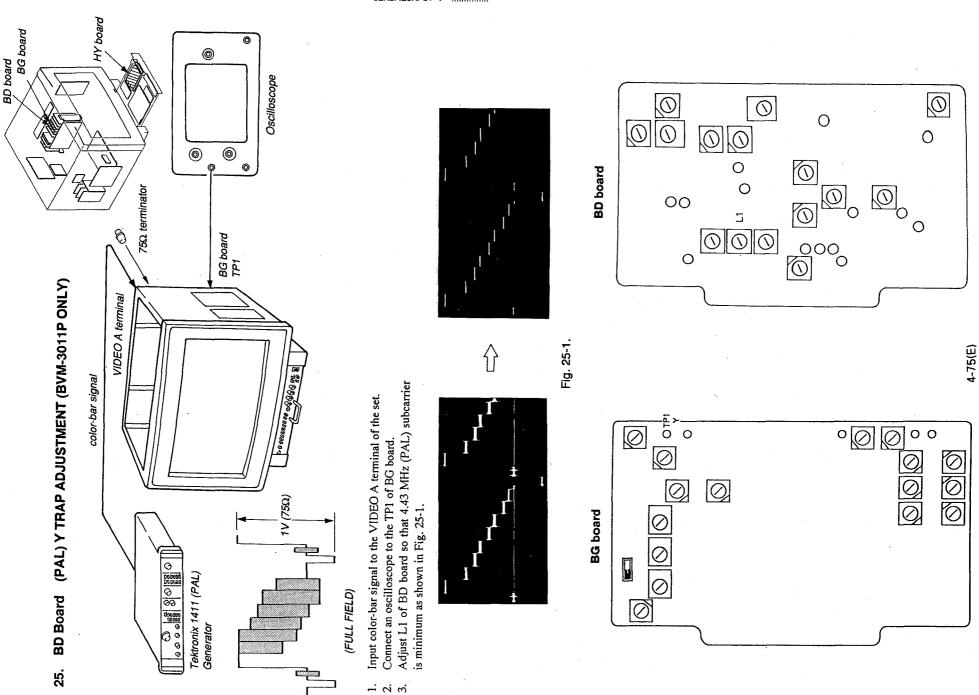


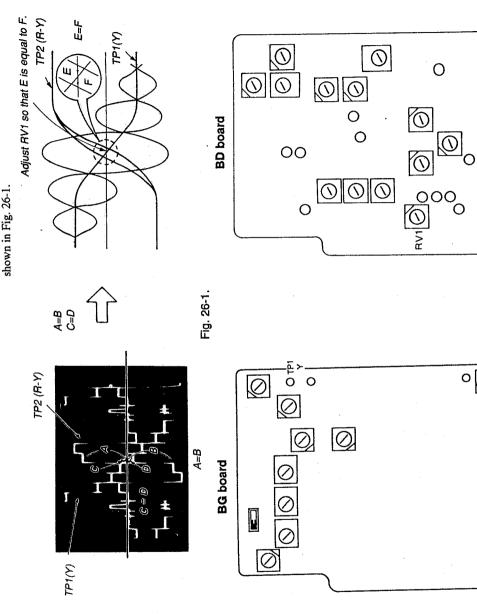
Fig. 24-3.



BD board

- PAL S/SECAM F/COMB S button
- (SUB CONTROL PANEL).....ON Input color-bar signal (FULL FIELD/Y REF) to the VIDEO A terminal of the set.
- board and connect an oscilloscope (CH-2 probe) to the TP2 of BG board (VERT mode of the oscilloscope is CHOP). Adjust RV1 of BD board so that the output waveform as Connect an oscilloscope (CH-1 probe) to the TP1 of BG
  - shown in Fig. 26-1.

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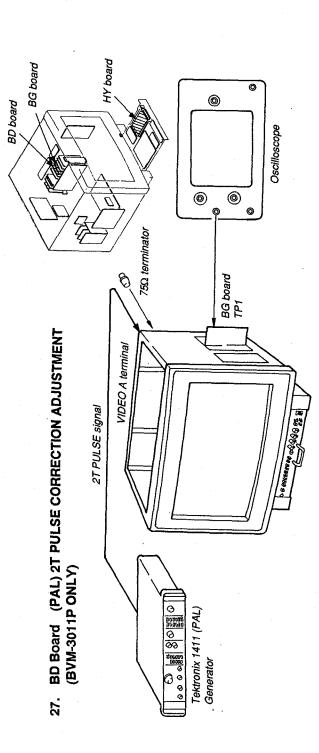
4-76(E)

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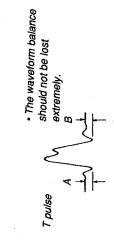
P2 RY

0

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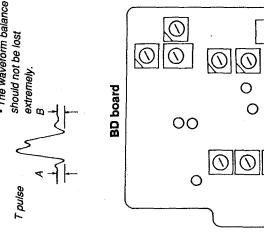


- Input 2T pulse signal to VIDEO A terminal of the set.
- Connect an oscilloscope to the TPI of BG board. Adjust L2 of BD or BM board so that the A is equal to B as shown in Fig. 27-1. 3 5.
- 4.
- Change the input signal from 2T pulse to T pulse, and make sure the waveform balance is not lost extremely as shown in Fig. 27-1.



Adjust L2 to obtain the condition A=B.

2T pulse

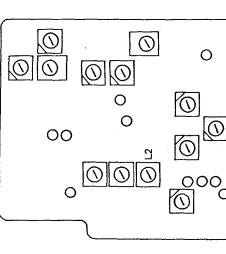


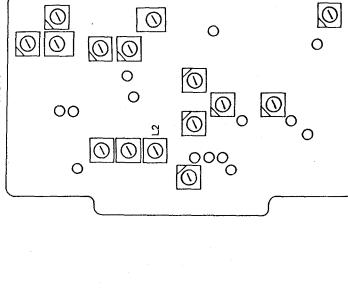
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Fig. 27-1.

BG board





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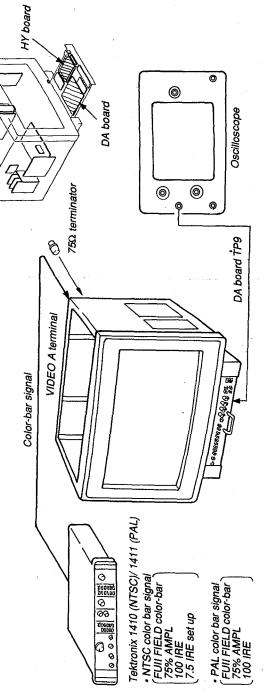
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# 28. DA Board V. LEVEL ADJUSTMENT



### PAL

- Input color-bar signal to the VIDEO A terminal of the set.
- Connect an oscilloscope to the TP9 on the DA board. Adjust RV18 of the DA board so that output waveform is 12.0 Vp-p as shown in Fig. 28-1. .. 2. %

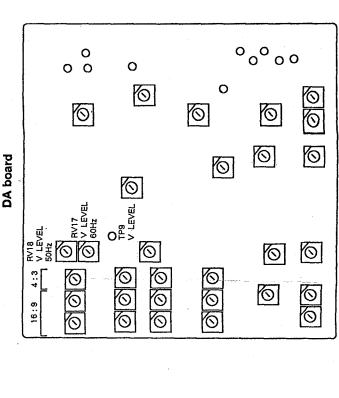


Fig. 28-1.

The following adjustment is required when a NTSC system signal is received.

### NTSC

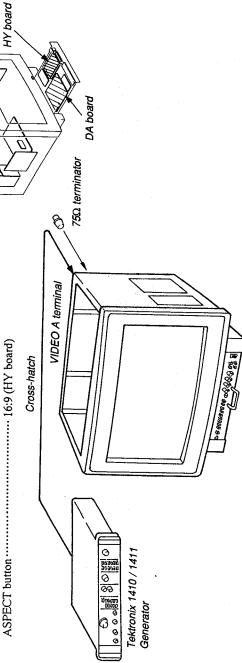
- Input color-bar signal (TEK-1410) to the VIDEO A terminal
- Connect an oscilloscope to the TP9 on the DA board. Adjust RV17 on the DA board so that output waveform is 12.0 Vp-p. 6 5.



4-77(E)

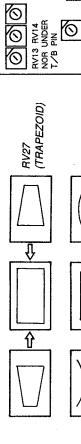
# 29. DA Board LINEARITY ADJUSTMENT

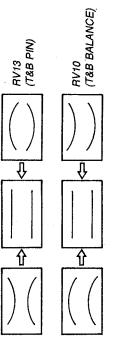
ASPECT button ...... 16:9 (HY board) Linearity adjustment of 16:9 aspect picture.

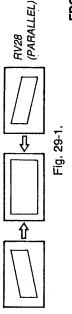


# TOP AND BOTTOM PIN ADJUSTMENT

- Receive cross-hatch signal and with H-LINE only.
- Adjust T&B pin distortion H PHASE by tuming DA boar RV27 (TRAPEZOID) as shown in Fig. 29-1. 7
- Adjust T&B pin distortion gain by turning DA board RV1 છ
- Adjust T&B pin distortion vertical balance by turning D. 4.
- Adjust PARALLELO GRAM distortion by turning D/board RV28 (PARALLEL) as shown in Fig. 29-1. board RV10 as shown in Fig. 29-1. Š.
  - Mark tracking by repeating 2 through 5.
- UNDER SCAN switch (front panel) ...... UNDER ( = Adjust T&B distortion gain by turning DA board RV14. 9.7.8







- O O -£800 0 FRONT PANE SCREEN APER BLUE MONO SCAN MODE 

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UNDER SCAN SW

§ 0 🗆

DA board

- 0 0 0 0 0 0 **(0)** 0 00 0 1 回 回 回 0000 000 16:9
- 0

Adjust SIDE PIN by turning DA board RV15 as shown in

Receive cross-hatch signal and with V. LINE only.

SIDE PIN ADJUSTMENT

Adjust SIDE PIN TILT by turning DA board RV19 as

Adjust H. CENTER LINE by turning DA board RV25 as

shown in Fig. 29-6.

shown in Fig. 29-5.

Fig. 29-4.

7

- 0
- 0
  - 00 TRAPEZOID
    RV10
    17.8
    BALANCE 0
- 0000 0

**⑥ ⑥** 

# RV15 (SIDE PIN)

Fig. 29-4.

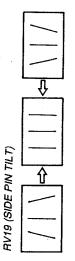


Fig. 29-5.

## V. LINEARITY ADJUSTMENT

- Receive cross-hatch signal and with H-LINE only.
  - Adjust V. CENTER by tuming DA board RV21

RV25 (H. CENTER LINE)

- Adjust V. LIN BALANCE by turning DA board RV20 as
- shown in Fig. 29-2. Adjust V. LIN GAIN by tuming DA board RV22 as shown in Fig. 29-3.

Š

- Adjust V. HEIGHT by turning DA board RV23. UNDER SCAN switch (Front panel) ....... UNDER ( = )
  - Adjust V. HEIGHT by turning DA board RV24. Mark tracking by repeating steps 2. through 5.

## **RV20...VLIN BALANCE**

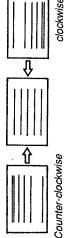
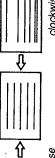


Fig. 29-2.



Receive cross-hatch signal and with V-LINE only.
Adjust H. LINEARITY by turning DA board RV6 (H. LIN GAIN) as shown in Fig. 29-7,

H. LINEARITY ADJUSTMENT1. Receive cross-hatch signal and2. Adjust H. LINEARITY by m.

UNDER SCAN switch (Front panel (L)) ······ UNDER ( ¬ )

Fig. 29-6.

Adjust SIDE PIN by turning DA board RV16.

6 5

clockwise

Fig. 29-7

Clockwise

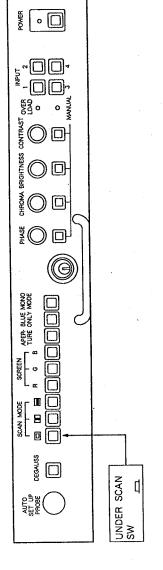
Counter-clockwise

Û

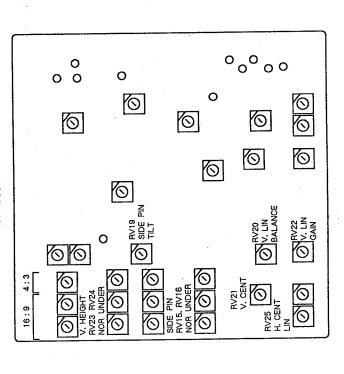
RV22...V LIN GAIN

Fig. 29-3.

### 4-80(E)



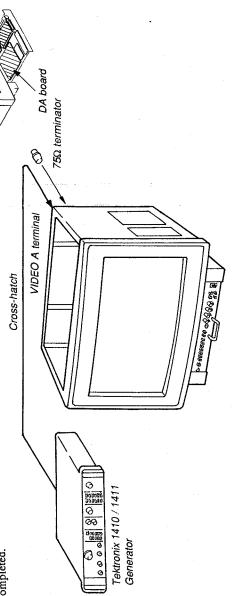
DA board



ASPECT button ......4:3 (HY board) Linearity adjustment of 4:3 aspect picture.

HY board

Adjust the convergence of the 16:9 aspect picture after convergence adjustment of the 4:3 aspect picture is completed.

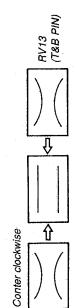


# **TOP AND BOTTOM PIN ADJUSTMENT**

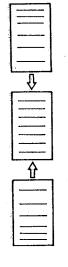
- Receive cross-hatch signal and with H-LINE only.
   Adjust T&B pin distortion gain by turning DA board RV30 as shown in Fig. 29-8.

# H. LINEARITY ADJUSTMENT1. Receive cross-hatch signal and2. Adjust H. WIDTH hy triming

Receive cross-hatch signal and with V-LINE only. Adjust H. WIDTH by turning DA board RV29 as shown in Fig. 29-11.







### Fig. 29-11. DA board

Fig. 29-8.

V. LINEARITY ADJUSTMENT

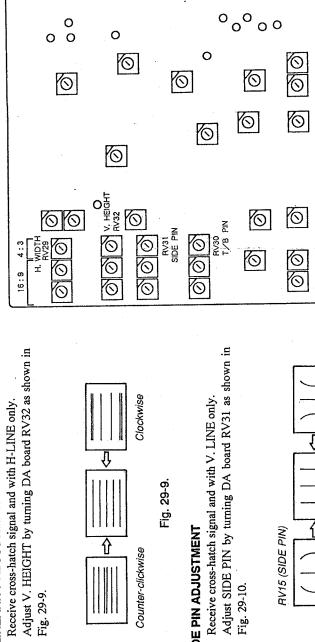
Fig. 29-9.



- SIDE PIN ADJUSTMENT

  1. Receive cross-hatch signal and with V. LINE only.

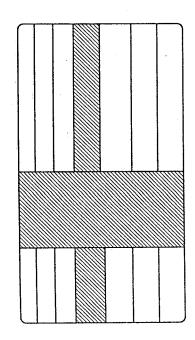
  2. Adjust SIDE PIN by turning DA board RV31 as shown in Fig. 29-10. RV15 (SIDE PIN)



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### H. FREO ADJUSTMENT . 9

Receive cross-hatch signal, and SYNC selector to EXT ( $\Box$ ) Adjust until the picture stops drifting or moves slowly by turning DA board RV5 as shown in Fig. 30-1.



\* Adjust so that the picture either stops drifing or moves slowly.

Fig. 30-1.

# 31. DA Board H. CENTER, BLK, H. PHASE ADJUSTMENT

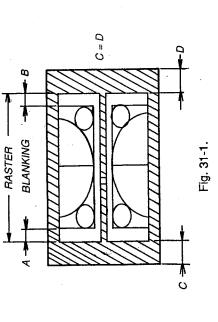
Receive monoscope signal, and UNDER SCAN switch to UNDER ( ).

7

Adjust RV1 and RV7 on the DA board so that the raster car • V. DELAY switch.......IN ( = all be seen RV1 and RV7 as shown in Fig. 31-1. 8

## H. CENTER 4. Adjust R\

Adjust RV26 on the DA board so that the out side portions of the raster become equal to at the right and the left sides as shown in Fig. 31-1.



- Connect an oscilloscope to the TP1 on the DA board Adjust RV1 on the DA board so that the H. BLK pulse H. BLK Adjustment
  5. Connect an oscillosox
  6. Adjust RV1 on the
  - width is 9.8 µs. Fig. 31-2.

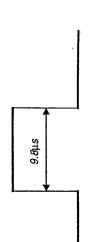
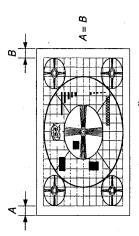


Fig. 31-2.

## H. BLK PHASE Adjustment

Adjust RV7 on the DA board so that the blanking width at the right and the left sides are equal to as shown in Fig. 31-3.



monoscope pattern

Fig. 31-3.

H. PHASE Adjustment

 Adjust RV4 on the DA board so that the outside raster portions of the picture become equal at the right and the left sides as shown in Fig. 31-4.

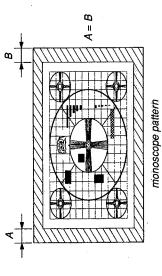
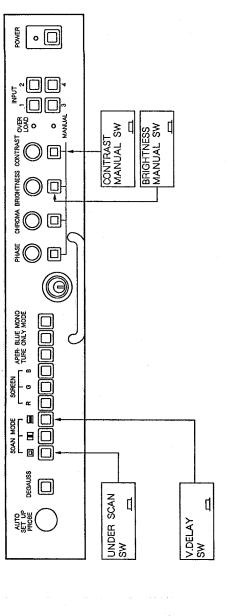
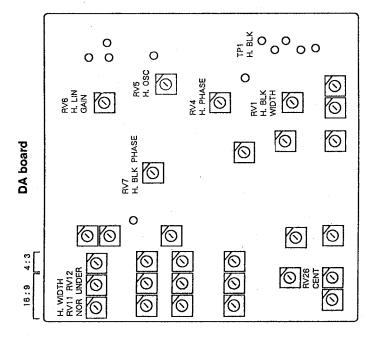


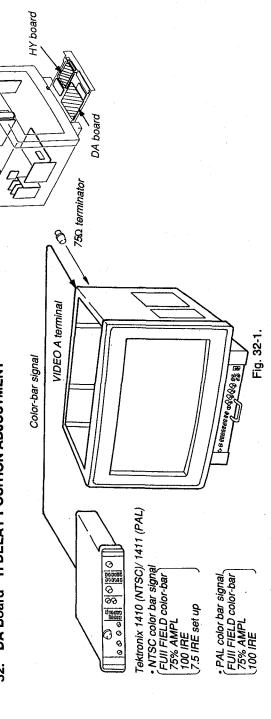
Fig. 31-4.

### FRONT PANEL









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DA board

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FULL FIELD COLOR-BAR

# H. DELAY PULSE WIDTH ADJUSTMENT 1. Connect an oscilloscope to the TP2 on the 2. Adjust RV3 on the DA board so that PUL

- Connect an oscilloscope to the TP2 on the DA board. Adjust RV3 on the DA board so that PULSE width is equal when switching H-DELAY switch IN and OUT.

- Connect as shown in Fig. 32-1.

  Turn the INPUT selector to "1" ( \_ ) SYNC button "INT" and, H DELAY & V DELAY SW to "IN" ( \_ ) (pulse close H. DELAY POSITION
  1. Connect as shown in I
  2. Tum the INPUT sele.
- Adjust the H-DELAY position as shown in Fig. 32-2. by turning DA Board RV2. position). છં

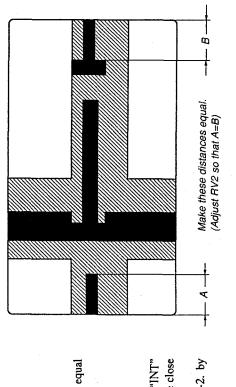
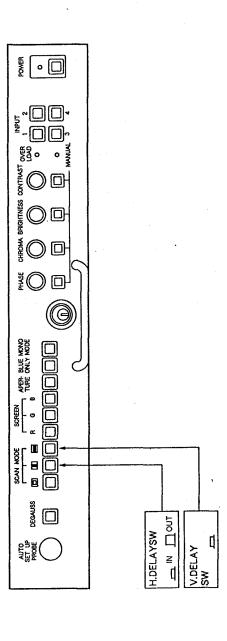


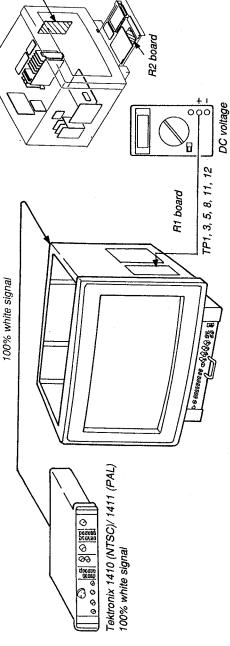
Fig. 32-2.

### FRONT PANEL



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# LANDING CORRECTION CIRCUITS ADJUSTMENT OF R1 AND R2 Boards BEAM ဗ္ဗ



## TERRESTAL MAGNETISM CORRECTION SECTION **ADJUSTMENT]**

- Set the LANDING ADJ DIRECTION SW (SW1) on the R. board to SE (6).
- Connect a DC voltmeter to TP1 of the R1 board and adjus the RV1 so that the output voltage becomes  $2.00 \pm 0.0$
- Set the LANDING ADJ DIRECTION SW to S (8).
- Connect a DC voltmeter to TP3 on the R board and adjus the RV2 so that the output voltage becomes  $3.00 \pm 0.0$
- section of the terrestrial magnetism. If the horizonta section value differs, make the adjustment in reference to Note: This setting value is for 0.25 gauss of the horizonta section 4-5. SET-UP ADJUSTMENT.

## [ADJUSTMENT OF THE BEAM CURRENT CORRECTION SECTION]

- Cut off R, G, B together with the CUT OFF SELECT on the
- Connect a DC voltmeter to TP5 on the R board and adjusfront panel.  $\vec{c}$
- the RV3 so that the output becomes  $60 \pm 20 \, \text{mV}$ . Receive the white signal (internal or external signal). Turn on the CONTRAST MANUAL SW on the front panel and adjust the CONTRAST control so that the TP5 output becomes 2.2 Vdc.
  - Connect TP5 and TP6, TP5 and TP7, with short clips respectively.
- the output becomes  $0 \pm 0.1$  Vdc.

Connect a DC voltmeter to TP8 and adjust the RV4 so tha

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- Connect TP5 and TP9, TP5 and TP10, with short clips ۲.
- Connect a DC voltmeter to TP11 and adjust the RV5 so that the output becomes  $0 \pm 0.1$  Vdc. ∞i

## **[OPERATION CONFIRMATION METHOD OF LANDING** ADJUSTMENT (R2 BOARD)]

- Receive the white signal (internal or external signal).
- Select pure green color by the CUT OFF SELECT on the N board and match the LANDING ADJ DIRECTION SW -: -:

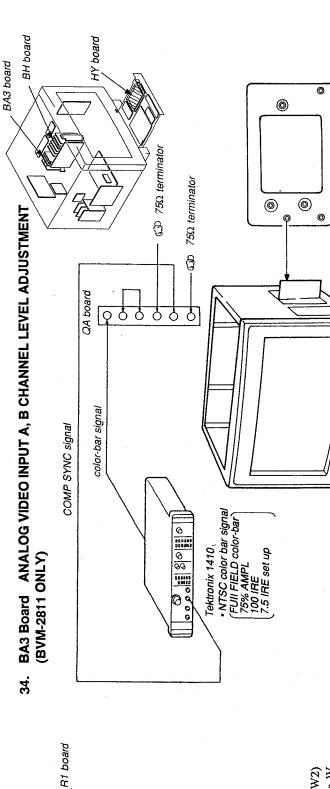
- Set to ON both the LANDING ADJ ON/OFF SW (SWZ) and LANDING FINE ADJ ON/OFF SW (SW3) on the W
- Set the volumes RV106 to RV111 to the mechanical center.
- RV100 is turned counterclockwise and it becomes bluish Confirm that the left upper corner becomes redish when when turned clockwise. Keep the poor purity as it is.
  - Confirm the same with RV101 to RV105 and keep them in poor purity.
- Set the LANDING FINE ADJ ON/OFF SW (SW3) to OFF and confirm that the purity becomes good.
- Set the LANDING FINE ADJ ON/OFF SW (SW2) to OFF Set the LANDING FINE ADJ ON/OFF SW (SW2) to ON. and confirm that the purity becomes good.
  - Set the LANDING ADJ ON/OFF SW to ON.

  - Set the volumes RV100 to RV105 to the mechanical center.
- Set the LANDING FINE ADJ ON/OFF SW (SW3) to OFF. Tum the LANDING ADJ DIRECTION SW (SW1) by one step at a time and confirm that the screen color smoothly changes. 10. 11. 12.

### W board

### Note: RV100 RV102 RV104 RV101 RV103 RV105

The screen corresponds to the adjustment volumes (RV100 to RV105).



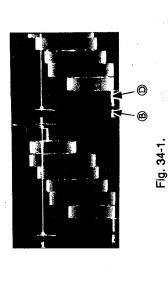
Input a color-bar signal to VIDEO terminal (QA board) of

oscilloscope

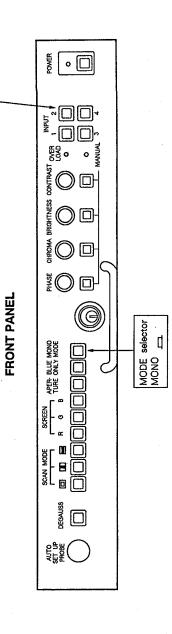
- SYNC button (SUB CONTROL PANEL) ..... EXT MODE selector (FRONT PANEL) ……MONO (□)
- Adjust RV101 of BA3 board so that the @ (100 IRE level) coincides with @ (100% white level) as shown in Fig. 34-1. Connect an oscilloscope to TP101 of BH board. 3 6
  - Select the 2ch INPUT.
- MODE selector (FRONT PANEL) .....MONO ( == INPUT button (SUB CONTROL PANEL) ......

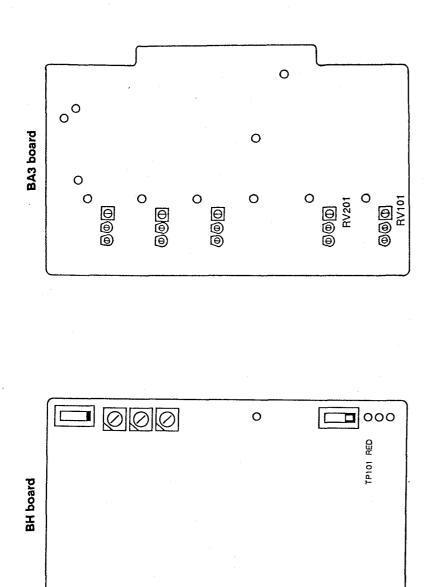
INPUT selector (FRONT PANEL) .......2 (□)

Adjust RV201 of the BA3 board in a similar manner of step Ś

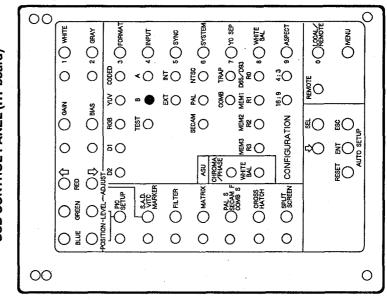


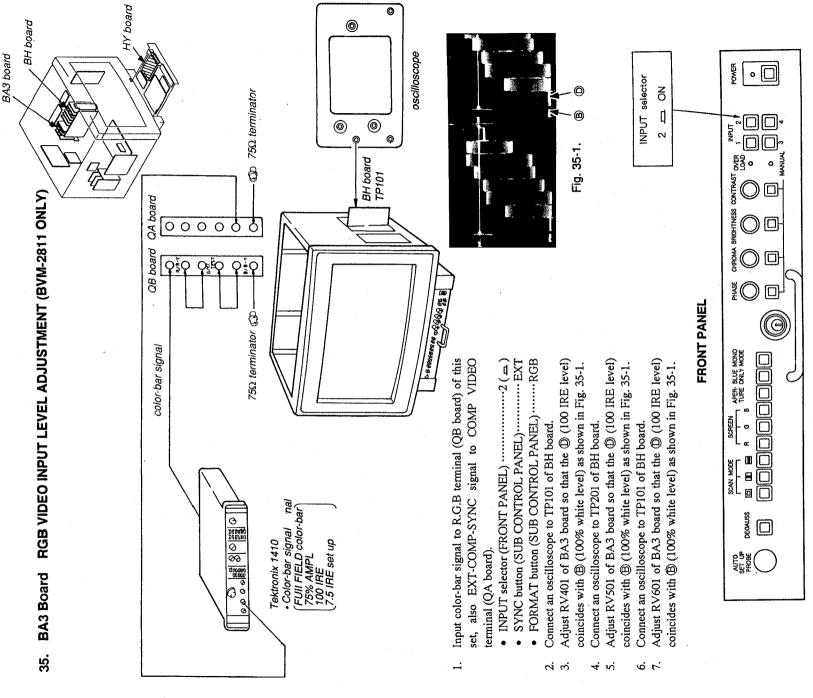
INPUT selector 8

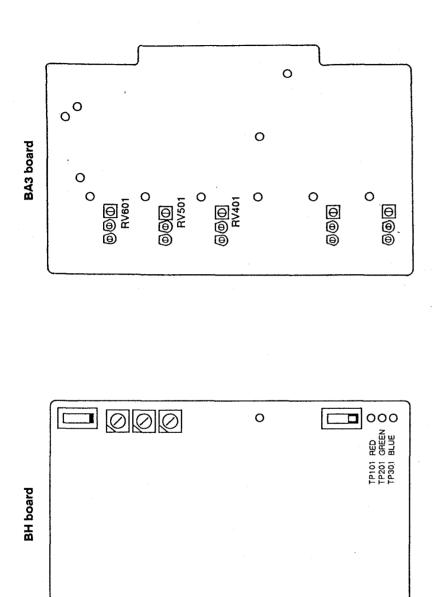


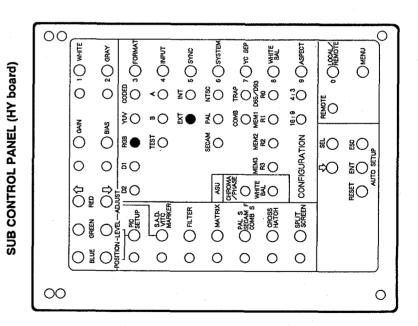












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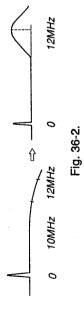
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- - BRIGHTNESS control (FRONT PANEL) ......Minimum Adjust output waveform peak to 12 MHz with CV102 of the BA3 board as shown in Fig. 36-2. r

### 4. ADJUSTMENTS

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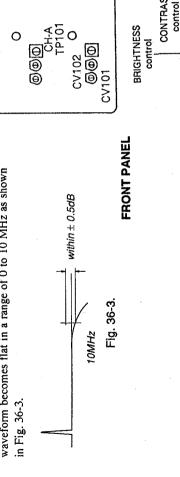


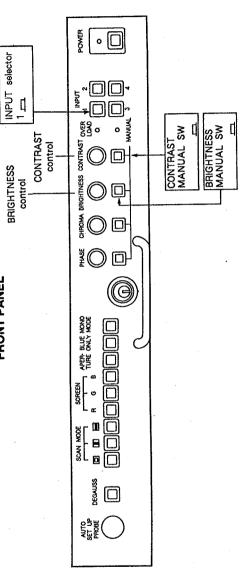
Adjust CV101 of the BA3 board so that the output waveform becomes flat in a range of 0 to 10 MHz as shown in Fig. 36-3. છં

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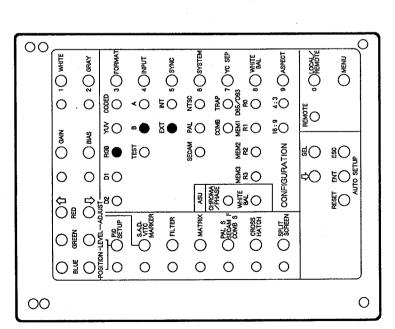




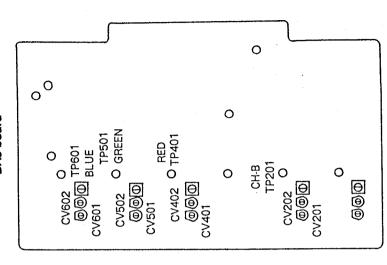
. In the same way, perform the adjustment for 2 CH, under the following conditions.

		~,	2)	۵.	
CV (BA board)	(aa)	CV201, 202	CV401, 402	CV501, 502	CV601, 602
TP (BA	board)	TP201	TP401	TP501	TP601
FORMAT button	(SUB CONTROL PANEL)	сорер	RGB	RGB	RGB
INPUT button	(SUB CONTR	В			-
INPUT		В	R/R-Y	G/Y/TEST	B/B-Y

# SUB CONTROL PANEL (HY board)



### BA3 board



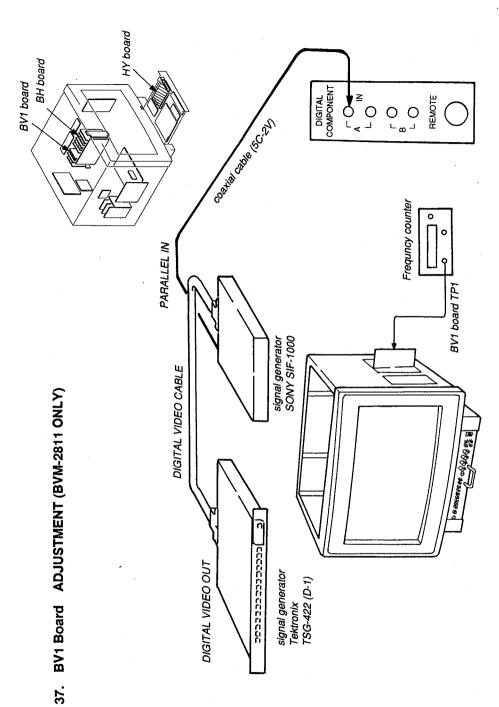
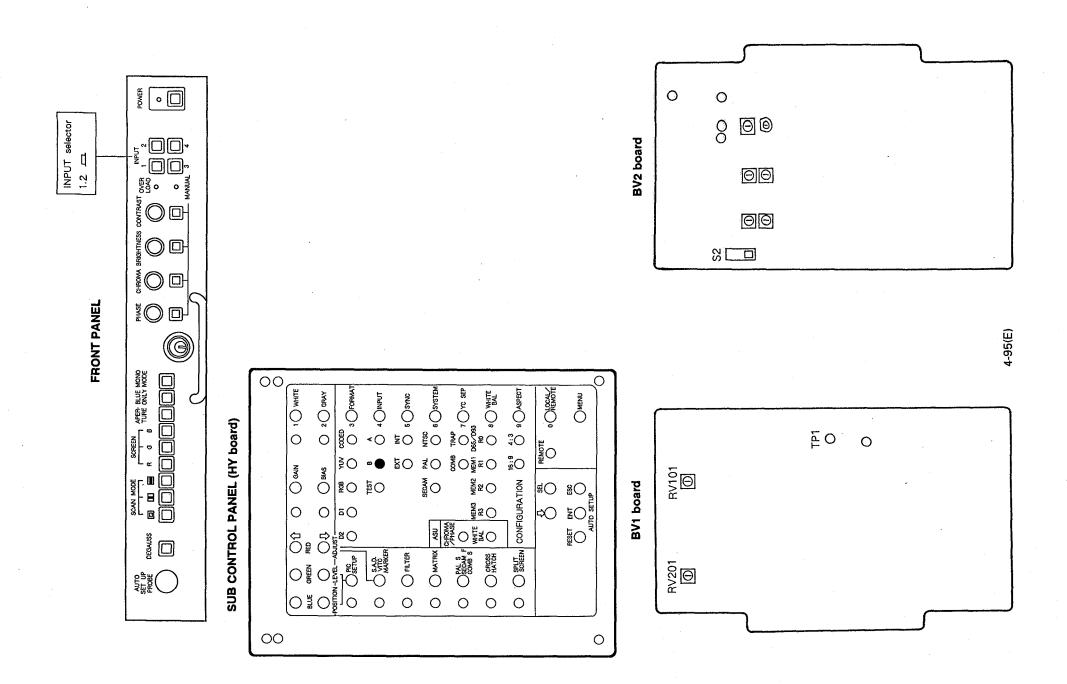
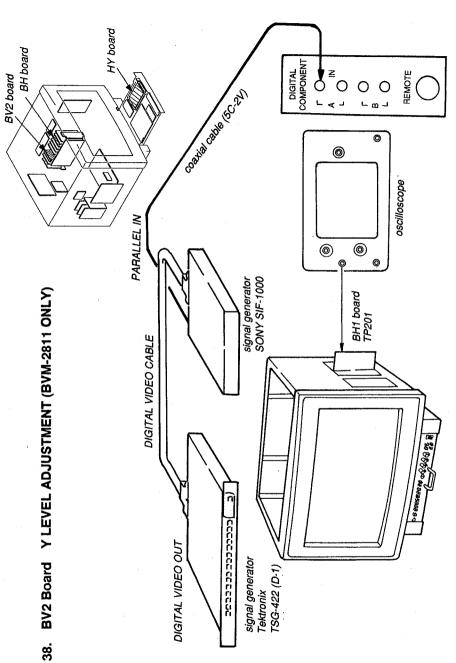


Fig. 37-1.

## 27 MHz CLOCK Adjustment

- Disconnect the signal connected to digital input terminal.
- INPUT selector (FRONT PANEL) ......
- FORMAT button (SUB CONTROL PANEL) ...... D1
  - COLOR STANDARD selector (BV2 BOARD S2)
- Connect a Frequency counter to TP1 on the BV1 board. Adjust RV101 on the BV1 board for 27 MHz. Select input to 2ch. 2, €, <del>4</del>,
- Adjust RV201 on the BV1 board for 27 MHz. Š.





- Receive color-bar signal (100/0/100).
  FORMAT button (SUB CONTROL PANEL)....... D1
  COLOR STANDARD selector (BV2 BOARD S2)
- ......LOWER
- Connect an oscilloscope to TP201 on the BH board. Adjust with RV301 on the BV2 board so that the levels of A and B become equivalent as shown in Fig. 38-1. 3 %

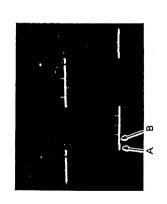
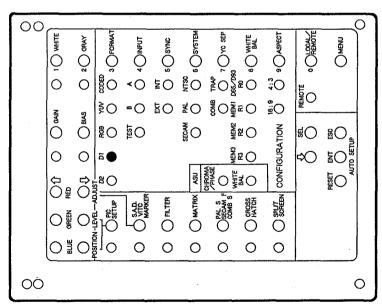
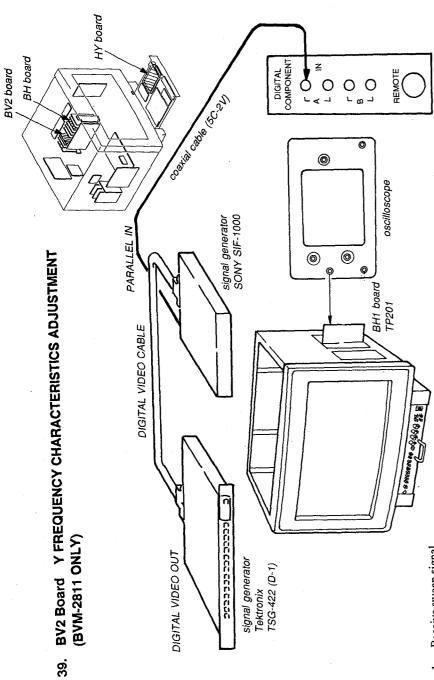


Fig. 38-1.

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- .. D1 Receive sweep signal.

   FORMAT button (SUB CONTROL PANEL) .......
- LOWER COLOR STANDARD selector (BV2 BOARD S2)
  - 3 6
- Connect an oscilloscope to TP201 on the BH board.
  Adjust with CV301 on the BV2 board so that the output waveform of 0 to 5 MHz range becomes flat as shown in Fig. 39-1.

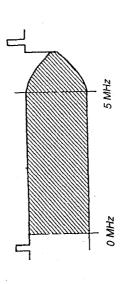
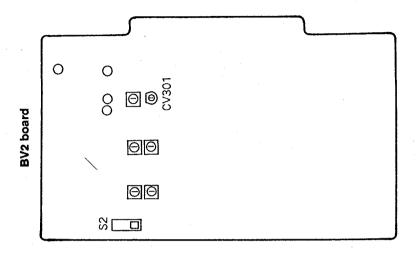


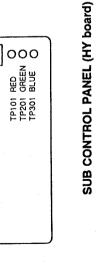
Fig. 39-1.

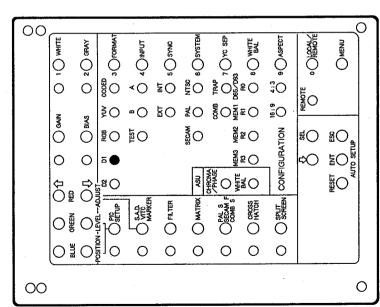


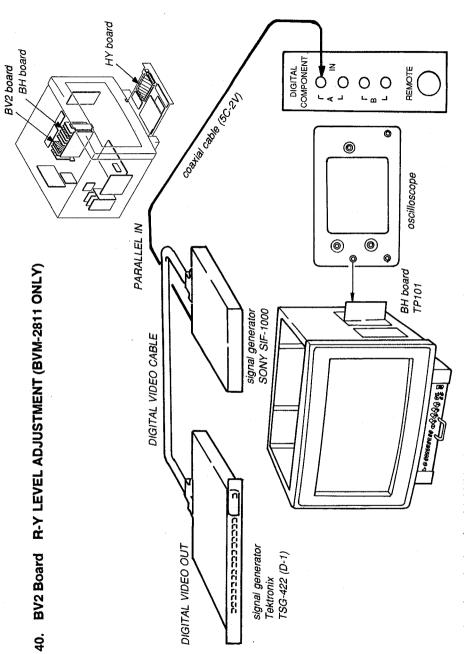
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**BH** board







- Receive color-bar signal (100/0/100).
  FORMAT button (SUB CONTROL PANEL) ....... D1
  COLOR STANDARD selector (BV2 BOARD S2) LOWER
  - લ હ
- Connect an oscilloscope to TP101 on the BH board. Adjust with RV101 on the BV2 board so that it becomes as shown in Fig. 40-1.

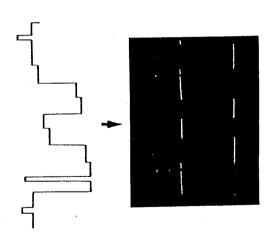
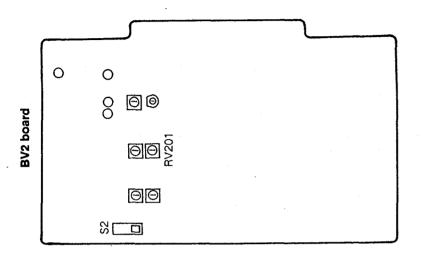
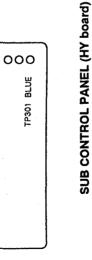


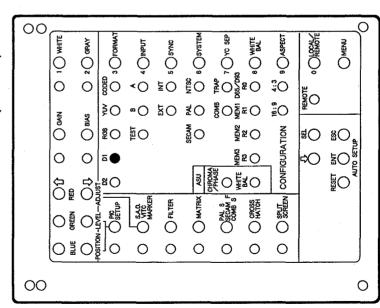
Fig. 40-1.

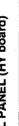


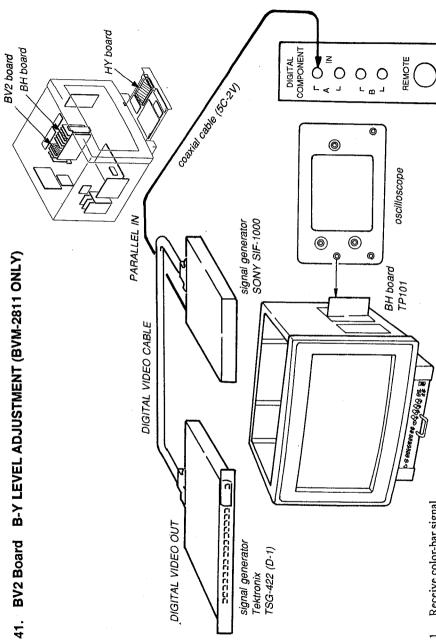
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BH board









- Receive color-bar signal.

   FORMAT button (SUB CONTROL PANEL) ....... D1
  - COLOR STANDARD selector (BV2 BOARD S2)
- - 3 6
- Connect an oscilloscope to TP301 on the BH board. Adjust with RV201 on the BV2 board so that it becomes as shown in Fig. 41-1.

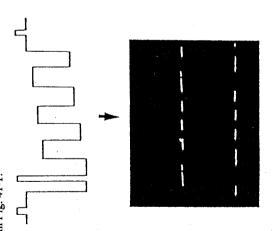
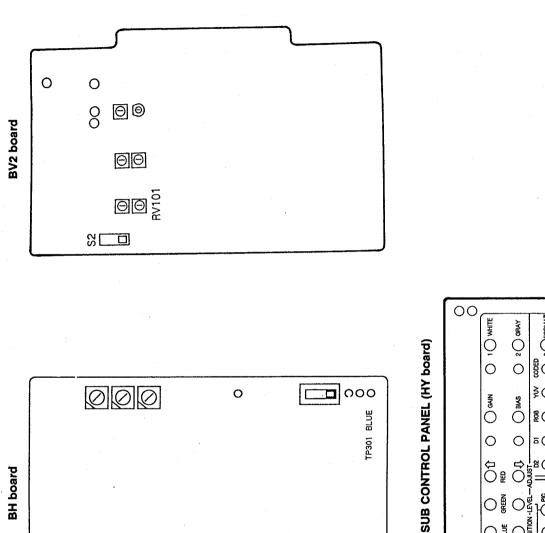
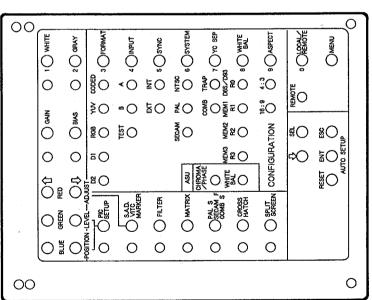


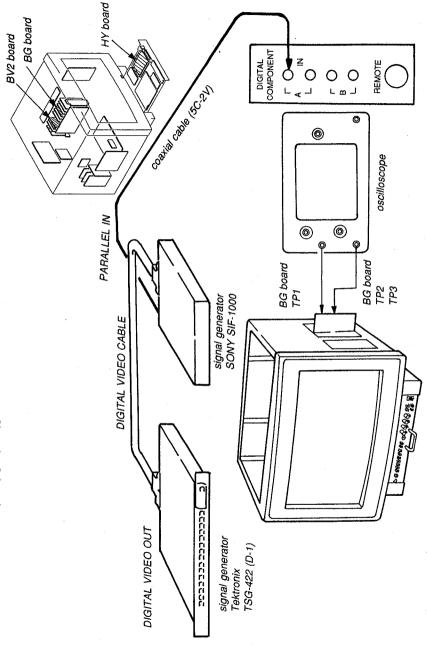
Fig. 41-1.





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## BV2 Board Y-(R-Y) [Y-(B-Y)] DELAY TIME ADJUSTMENT (BVM-2811 ONLY) 45.



- Receive color-bar signal.

   FORMAT button (SUB CONTROL PANEL) ......... D1

   COLOR STANDARD selector (BV2 BOARD S2)
- Connect CH1 probe of oscilloscope to TP1 on the BG board ri
- and CH2 probe to TP2 (TP3) on the BG board.  $\omega$ 
  - Adjust the respective positions of oscilloscope so that the waveform of CH1 becomes a=a' and the of CH2 becomes b=b' against the center scale as shown in Fig. 42-1.
- 4. 2.
- Enlarge a-a' and b-b' sections in Fig. 42-1. Adjust with RV102 (RV202) on the BV2 board so that the intersecting point of waveforms CH1 and CH2 becomes on the center scale.

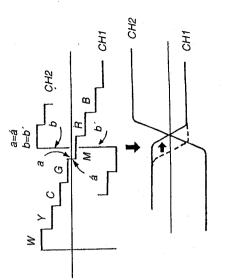
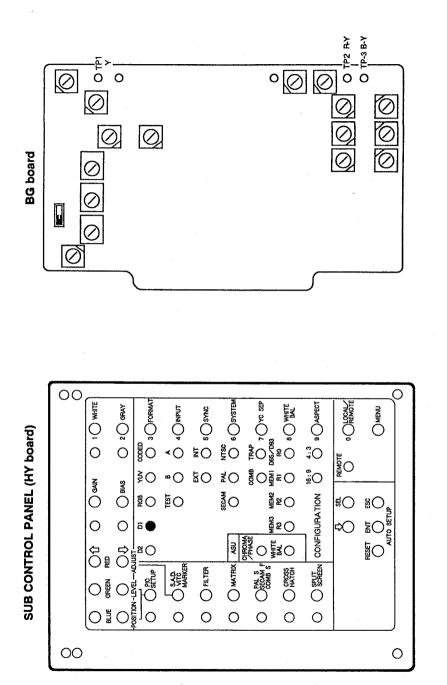
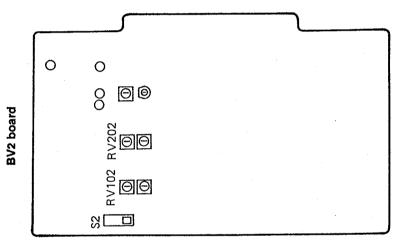
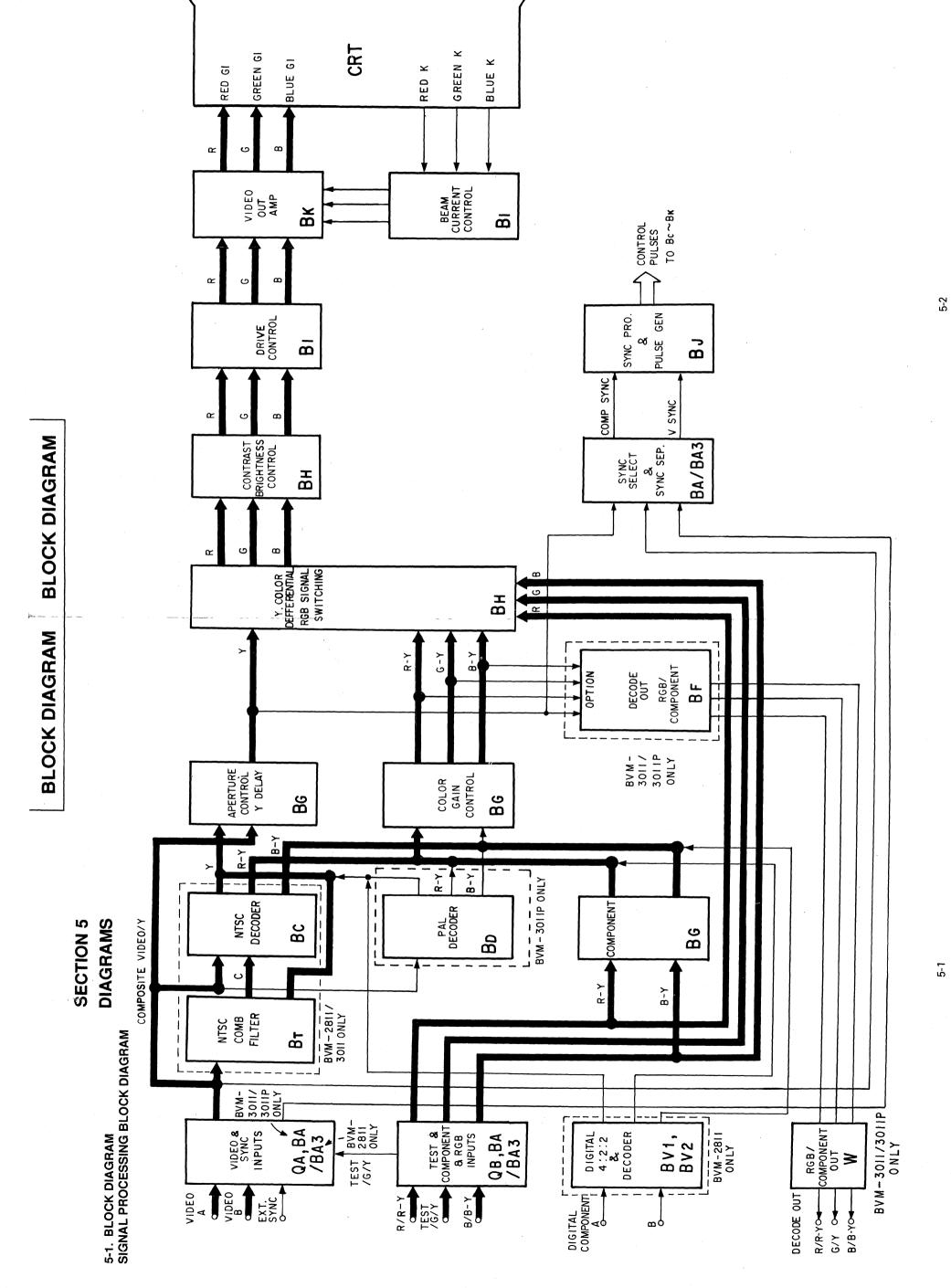


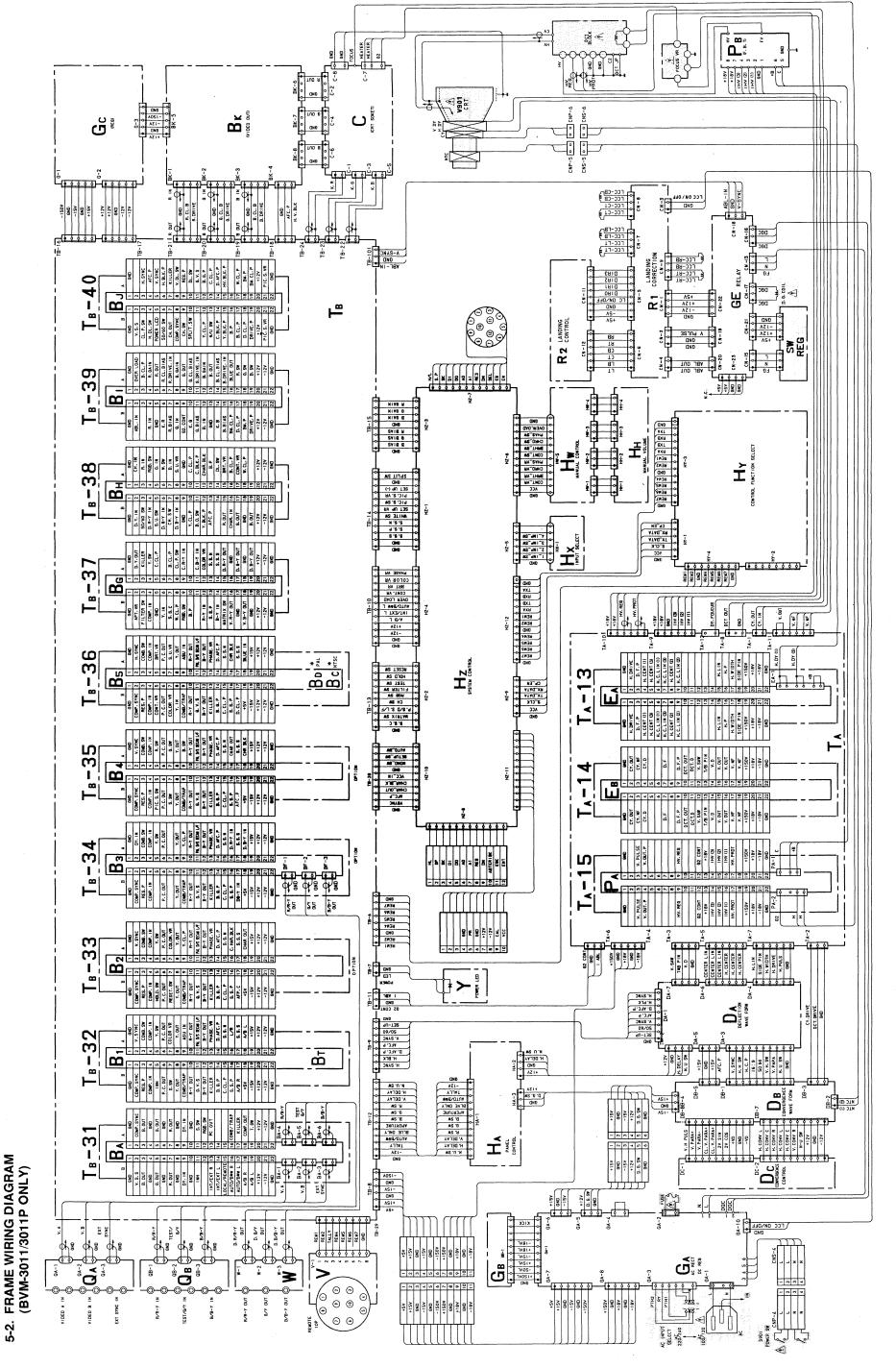
Fig. 42-1.





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5-2. FRAME WIRING DIAGRAM (BVM-2811 ONLY)

### 5-3. 回路図,プリント図

スイッチ及びコントロールつまみの位置

△および ※※※※ 印の部品は,安全性を維持するために,重要な部品です。従って交換時は,必ず指定の部品を使用して下さい。

マイクロインダクタ LF-8L : マイクロインダクタ

・ ケミコンを除くコンデンサで耐圧50V以下のものは、その耐圧を 省略。単位はすべてuF [pltpF] 耐圧表示のないかミコンは50Vです。 ・ 抵抗で指示のないものは1/14W。単位はすべてΩ。 ただしBT,DC,HY及びHZ基板は1/10Wです。 ・ チンガ抵がで指示のないものは1/10W。 ・ 可変抵抗と半固定抵抗で、B特性の表示は省略。 ・ 一・ シャーン上にある一一の印に直接接続する。 ・ 一・ シャーン上にある一一の印に直接接続する。 ・ 一・ はパネル表示名称及び調整名称。 ・ 半固定抵抗及び可変抵抗器の特性カーブ(B)は省略。 ・ 「国 ロの部品の定数は、X線量規制の規格を満足させるため,製造時セット毎に確認し決定したものです。 下一,この部品を交換する場合は、セットに付いている部品と同一のものをご使用下さい。 また,回路図上の 「国 印の部品を交換した場合は、指定された調整、確認が必要です。確認の結果が指示した値と合致しない場合は、 Im の部品を交換し、必ず指示した値と合致しない場合は、 Im の部品を交換し、必ず指示した値と合致するように調整して下さい。 (4-13 (J)~4-18 (J)ページのR52, R53, R67, R68, R124, R126, R222, R227, R228, R239の確認方法を参照)

・マイラ ・メタライズドポリエステル ・メタライズドポリプロピレン ・バイポーラ ・ 高温用

: ハイリップル

▼ マーク部品	印の部品
C59, IC3, R67, R68, R78, RV2 (GA基板)	+B MAX確認 (R67, R68) 4-13 (J)ページ
Q13, Q14, R52, R53 (GA基板) D5, D6, D7, D8, Q3, Q4, Q5, R4, R5, R19, R20, R21, R22 (GB基板)	+B プロテクター (R52, R53) 4-13 (J) ページ
D216, IC1, IC4, R123, R124, R125, R126, R136, R137, R138, R203, R204, RV1 (PA基板) DCTブロック	HVレギュレータ確認 (R124, R126) 4-18 (J)ページ
D205, D207, D215, IC2, R201, R202, R213, R214, R225, R226, R227, R228, R243, R245 (PA基柢) DCTブロック	HVホールドタウン調整 及び確認 (R227, R228) 4-16 (J)ページ
D205, D206, D215, IC2, R201, R202, R213, R214, R220, R221, R222, RF223, R224, R242 (PA基柢) T1 (FBT), R1, R2, R5 (PB基柢)	ビーム電流プロテクタ-1 の確認 (R222) 4-13 (J)ページ
D204, D216, IC3, R203, R204, R231, R232, R237, R238, R239, R240, R241, R247 (PA基板) T1 (FBT), R3, R4, R5, R6 (PB基板)	ビーム電流プロテクタ-2 の確認 (R239) 4-14 (J)ページ

HX基板 、	, HW基板		 HA基板		7				:	HY 基板 						DA基板
1 DDECET	#	NOR NOR	NOR NOR	NOR NOR		CODED	TNI	COMB D65/93	4:3	OFF OFF	OFF			OFF OFF	OFF	2m sec
フロントパネル • INPUT セレクター		© UNDER SCAN	AY スイッチ スイッチ	• SCREEN メイッチ (B)	サブコントロールパネル	• FORMAT ボタン • INPUT ボタン	・SYNC ボタン ・cvcTFM ボタン	・WHITE BALANCE ボタン・YC SEP ボタン	• ASPECT ボタン	・PIC SETUP ホタノ ・SAD/VITC/MARKER ボタン	• FILTER ボタン • MATDIX ボタン	・PAL S/SECAM F/COMB S ボタン	・CROSS HATCH ボタン	・SPLIT SCREEN ボタン	・GRAY ボタン	

: Pattern from the side which enables seeing.

: Pattern of the rear side.

# 5-3. MOUNTING AND SCHEMATIC DIAGRAMS

Note: The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et par une marque a sont d'une importance critique pour la sécurité. Ne les remplacer que par des pièces de numéro spécifié. Note:

All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
 All electrolytics are in 50V unless otherwise specified.
 All resistors are in ohms, 1/2W on the C board, 1/10W on the BA3, BT, BV1, BV2, DC, HY, and HZ boards and 1/4W on the rest of the boards unless otherwise specified.
 κΩ=1000Ω, ΜΩ=1000κΩ.
 Chips resistors are 1/10W unless otherwise specified.
 ★Ω=1 monflammable resistor.
 internal component.
 direct connection to points marked — on the chassis.
 internal component.
 All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
 The components identified by ▼ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used. When replacing components identified by ▼ and recessary adjustments indicated. If results do not meet the specified value, change the component identified by ▼ and repeat the adjustment until the specified value is achieved. Refer to R52, R53, R67, R68, R124, R126, R222, R227, R

R228 and R239. Adjust on page 4-13 (E)  $\sim$  4-18 (E) When replacing the part in below table be sure to parform the related adjustment.

METAL FILM SOLID	NONFLAMMABLE CARBON	NONFLAMMABLE FUSIBLE NONFLAMMABLE WIREWOUND	NONFLAMMABLE CEMENT	MICRO INDUCTOR	TANTALUM	STYROL	POLYPROPYLENE	MYLAR	METALIZED POLYESTER	METALIZED POLYPROPYLENE	BIPOLAR	HIGH TEMPERATURE	HIGH RIPPLE
ormation : RN : RC	FPRD	. FUSE	82	: LF-8L	۲.	 S	<u></u>	F.	: MPS	. MPP	: ALB	: ALT	: AIR
Reference Information RESISTOR : RN : RC				COIL	CAPACITOR								

	in the state of th
4-15 (E)	(PB board)
Page 4-14 (E)~	T1 (FBT), R3, R4, R5, R6
(R239)	H240, H241, H247(PA baord)

• B+ line.
• B- line.
• B- line.
• Circled numbers are waveform references.
• Waveforms are taken with a color-bar signal input and with a 75Ω terminator connected to an open terminal.

					· · · · · · · · · · · · · · · · · · ·	
Adjustment (M)	B+MAX (R67, R68) Page 4-13 (E).	B+PROTECTER (R52, R53) Page 4-13 (E).	HV REG (R124, R126) Page 4-18 (E).	HV HOLD DOWN (R227, R228) Page 4-16 (E).	BEAM CURRENT PROTECTOR-1 (R222) Page 4-13 (E)~ 4-16 (E)	BEAM CURRENT PROTECTOR-2 (R239) Page 4-14 (E)~
Part replaced (	C59, IC3, R67, R68, R78, RV2(GA board)	Q13, Q14, R52, R53 (GA board) D5, D6, D7, D8, Q3, Q4, Q5, R4, R5, R19, R20, R21, R22 (GB board)	D216, IC1, IC4, R123, R124, R125,R126,R136,R137,R138, R203, R204, RV1(PA board) DCT BLOCK	D205, D207, D214, D215 IC2, R201, R202, R213, R214, R225, R226, R227, R228, R229, R230, R243, R245 (PA board) DCT BLOCK	D205, D206, D215, IC2, R201, R202, R213, R214, R220, R221, R222, R223, R224, R242 (PA board) T1 (FBT), R1, R2, R5 (PB board)	D204, D216, IC3, R203, R204, R231, R232, R237, R238, R239, R240, R241, R247(PA baord) T1 (FB hoard)

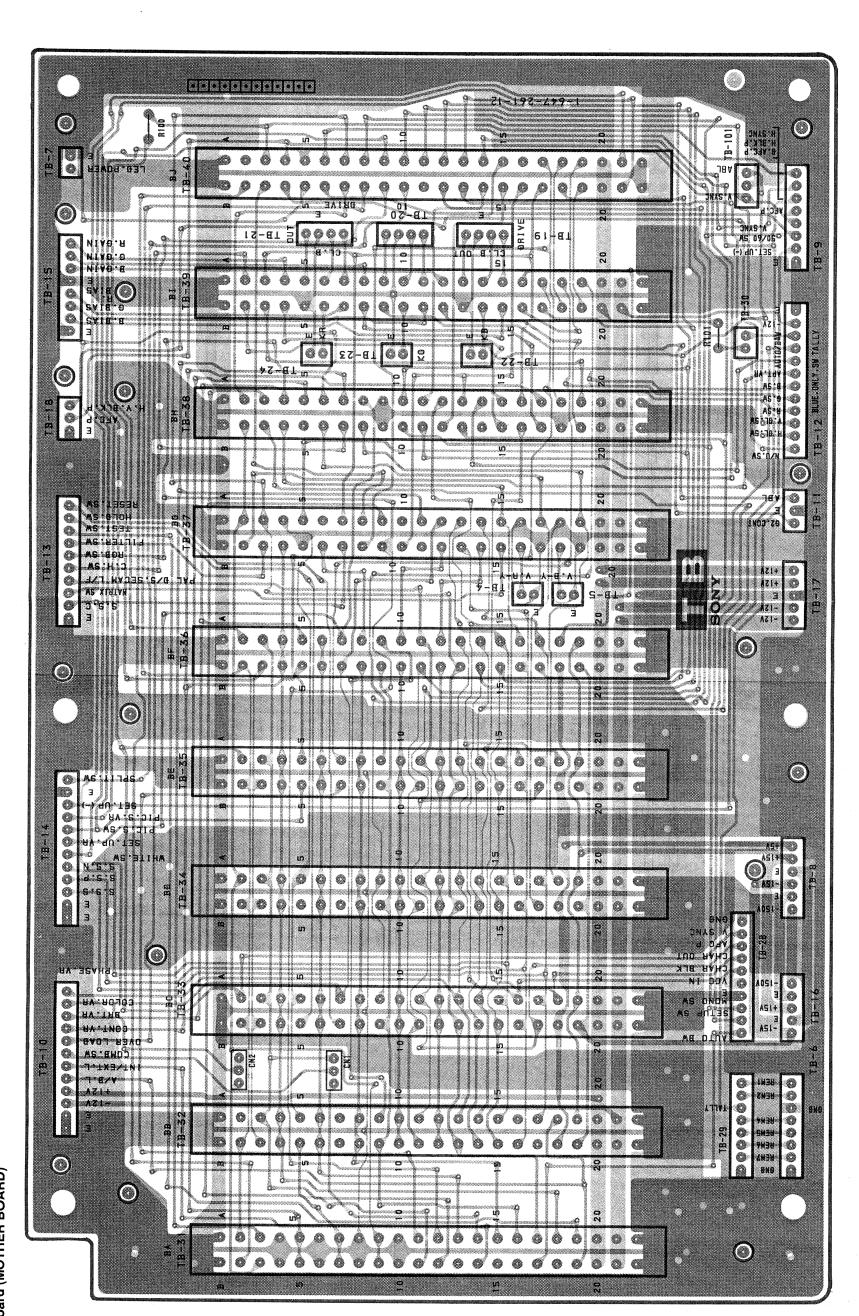
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Switches	noted.

HX board HW board	HA board	L HY board	DA board
FRONT PANEL  NPUT selector 1  CONTRAST MANUAL switchPRESET BRIGHTNESS MANUAL switchPRESET CHROMA MANUAL switchPRESET PHASE MANUAL switchPRESET SOLVE SALVEST	SCAN MODE switch     UNDER SCAN		SAD/VITC/MARKERbutton OFF     HLTER button OFF     MATRIX button OFF     PAL S/SECAM F/COMB S button.     OFF     CROSS HATCH button OFF     SPLIT SCREEN button OFF     WHITE button OFF     WHITE button OFF     AFC switch OFF

### Note:

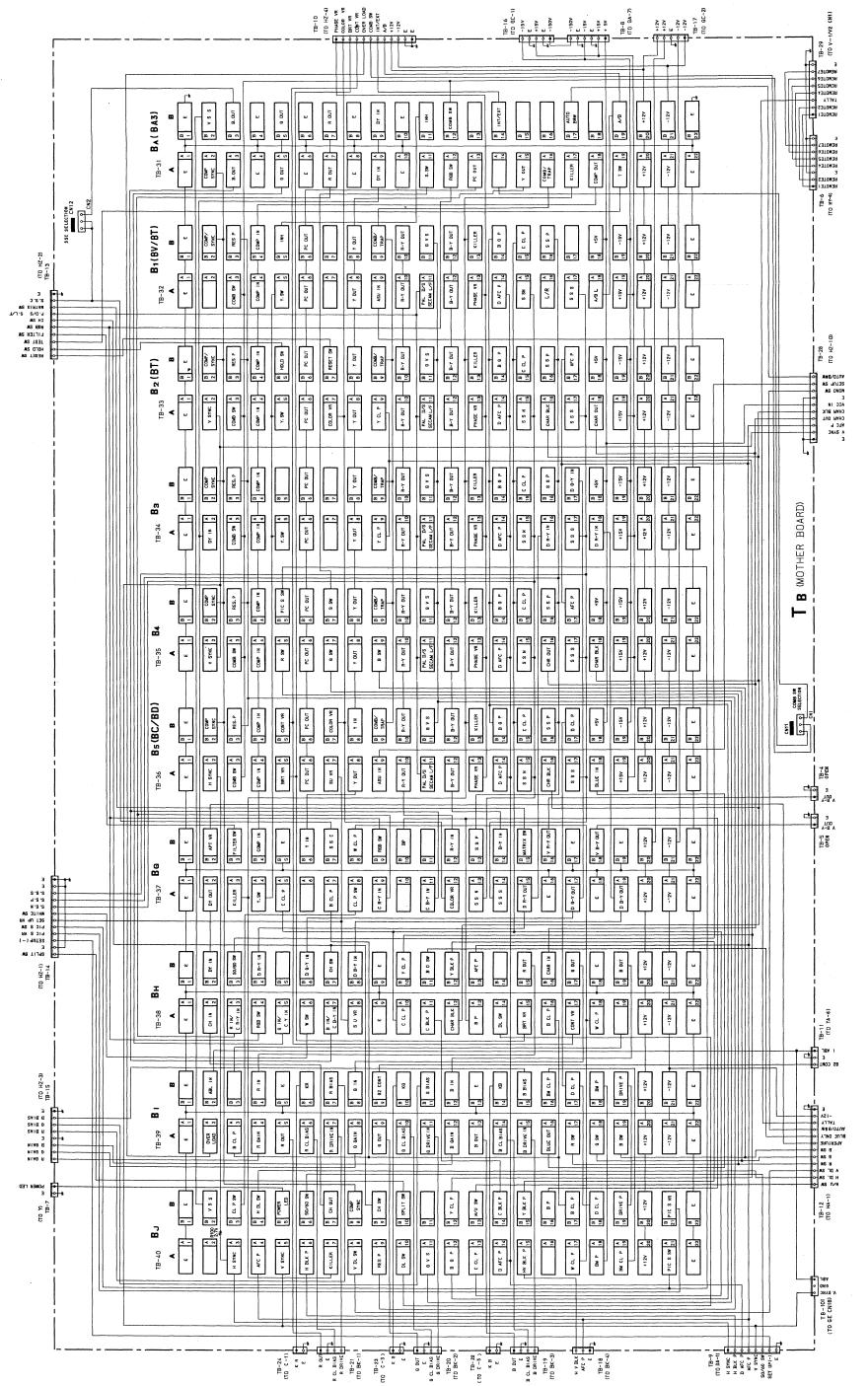
• Pattern from the side which enables seeing.
• Pattern of the rear side.

TA board (MOTHER BOARD)



: Pattern from the side which enables seeing.

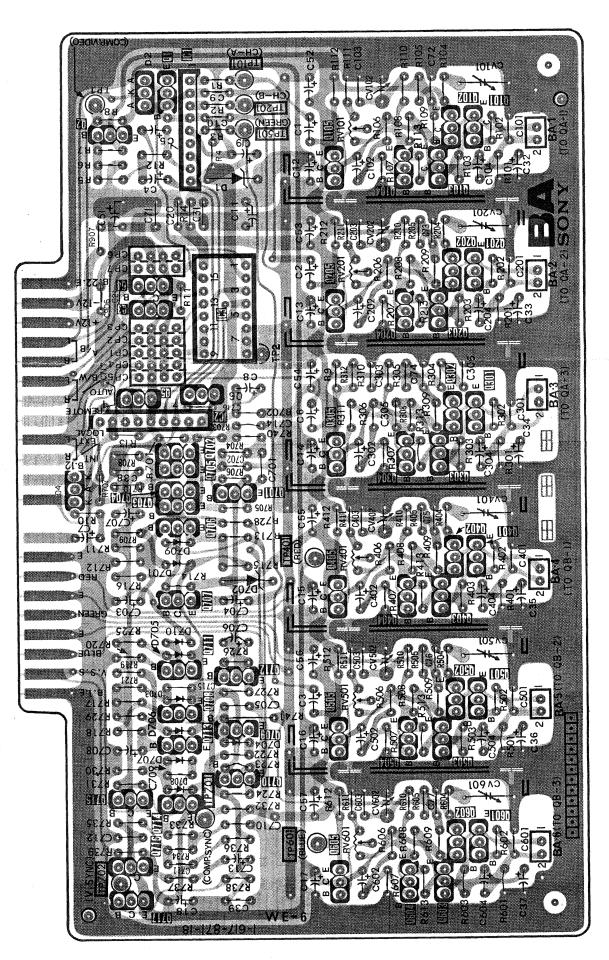
TB board (MOTHER BOARD)



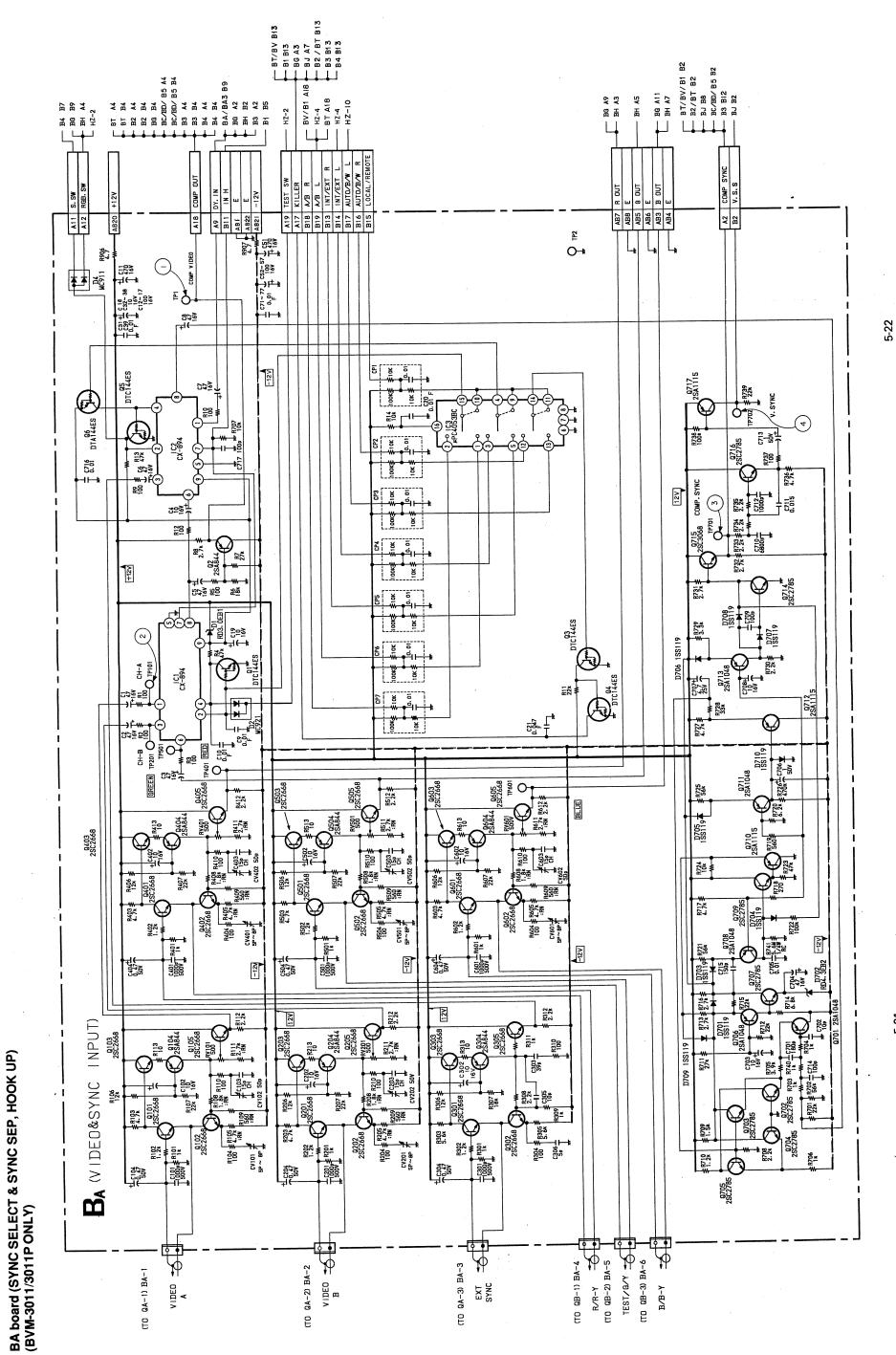
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BA board (SYNC SELECT & SYNC SEP, HOOK UP) (BVM-3011/3011P ONLY)

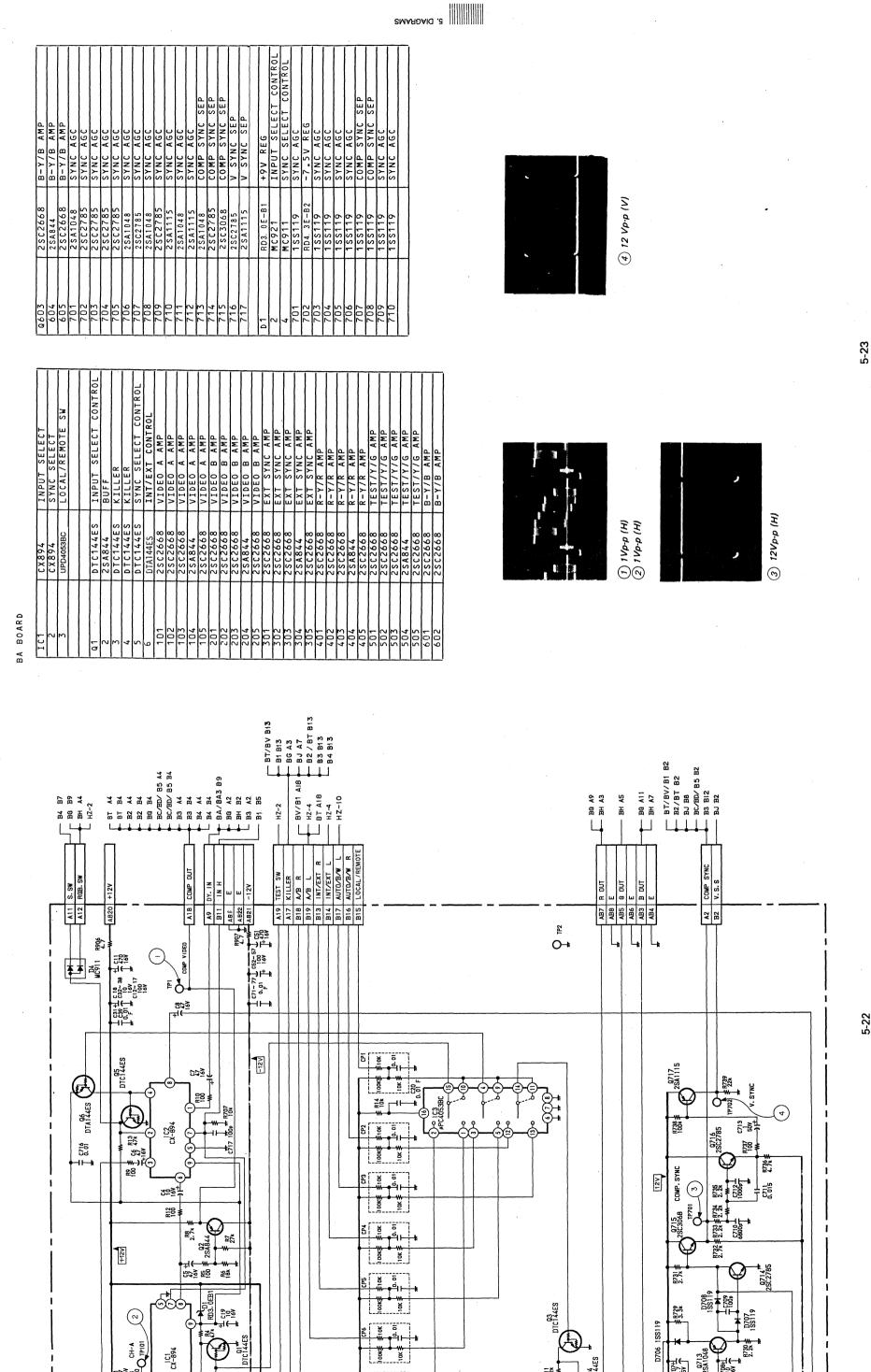
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	2 2 105 103 103	100	2	TPI TP501 TP201 TP101 RV101	
	200		-		
m	3 4 205 204 203 203	201		RV20I	CV202 CV20I
				TP2	
2	5 702 5 6 5 20 3 20 3 20 3 20 3 20 3 20 3 3 20 3 3 3 3	301		<b>F</b>	
	704 706 703 705 702 701 305 304 304	401	101 709 <sup>4</sup> 702	TR40I RV40I	CV402 CV40I
	707 405 404 404	3	7		
	71	502 501	708 707 706 703 705 710 704	TP70I	
		709 609 601		TP702 TP601	RV601 CV602 CV601
2	2 0		۵	<u>p</u>	AD



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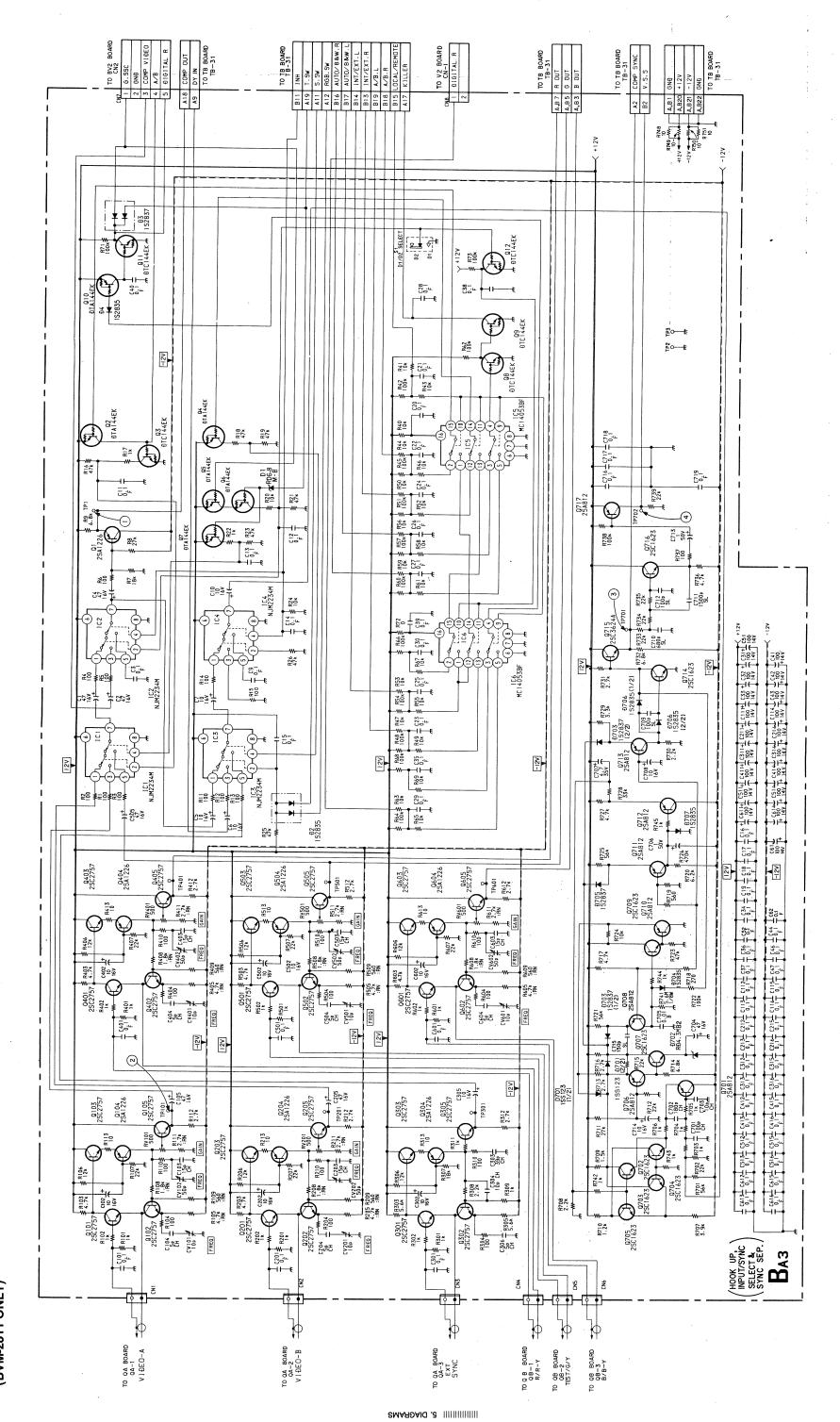


BA



NC SEP) BA3 board (HOOK UP, INPUT/SYNC SELECT & SY (BVM-2811 ONLY)

BA3



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R16 ₹

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01A144EK

1 C13 W RZ2 W RZ2

\$ 10k ★ RD6.8

104 NJM2234M | 1

\$ 47x

1-00.7

C14 0,1 \$ 10k

R26 47k

COMP SYNC SEF

B-Y/B AMP
B-Y/B AMP
B-Y/B AMP
B-Y/B AMP
B-Y/B AMP
B-Y/B AMP
SYNC AGC

INPUT SELECT CONTROL
INPUT SELECT CONTROL
REMOTE DIGITAL CONTROL
REMOTE DIGITAL CONTROL
SYNC AGC

SYNC AGC COMP SYNC SEP SYNC AGC

SYNC AGC SYNC AGC -7.5V REG

TO V2 BOARD CN-1 DIGITAL R

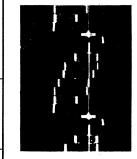
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| 1004 | 169 | 1697 | 1694 | 1694 | 1694 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1695 | 1

K RS3 | R66 | R72 | R66 | R72 | R66 | R72 | R67 | R67

R73 100k

08 DTC1446



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R736 4.7k

1500 1500 1500 1500

C43 C42 C41 100 1140 1140

C713 50√ 1+ 1+

100 100

\$ R739

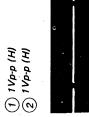
 $\frac{1}{7}^{C716} = \frac{1}{6}^{C717} = \frac{1}{6}^{C718}$ 

9

R738 100k

2.73, \$ (25C3624A 3)

0717 25A812



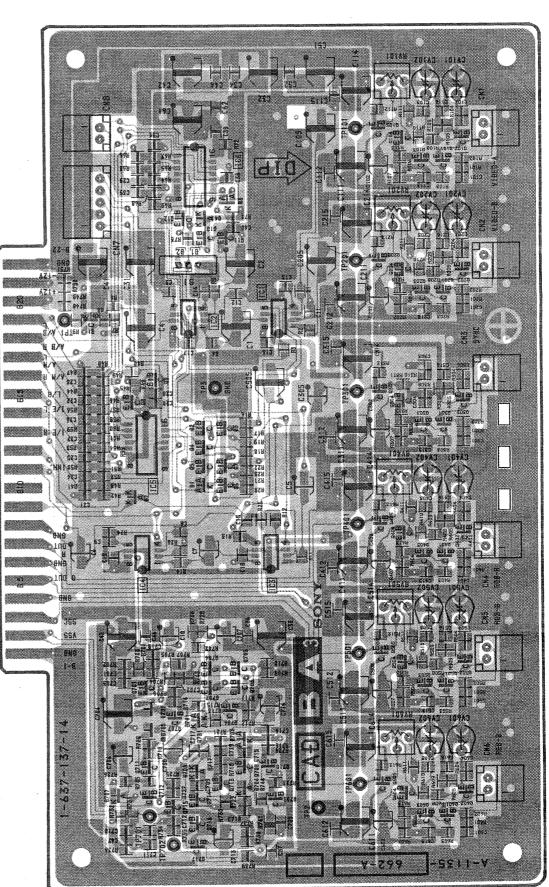
(4) 12 Vp-p (V)



3) 12Vp-p (H)

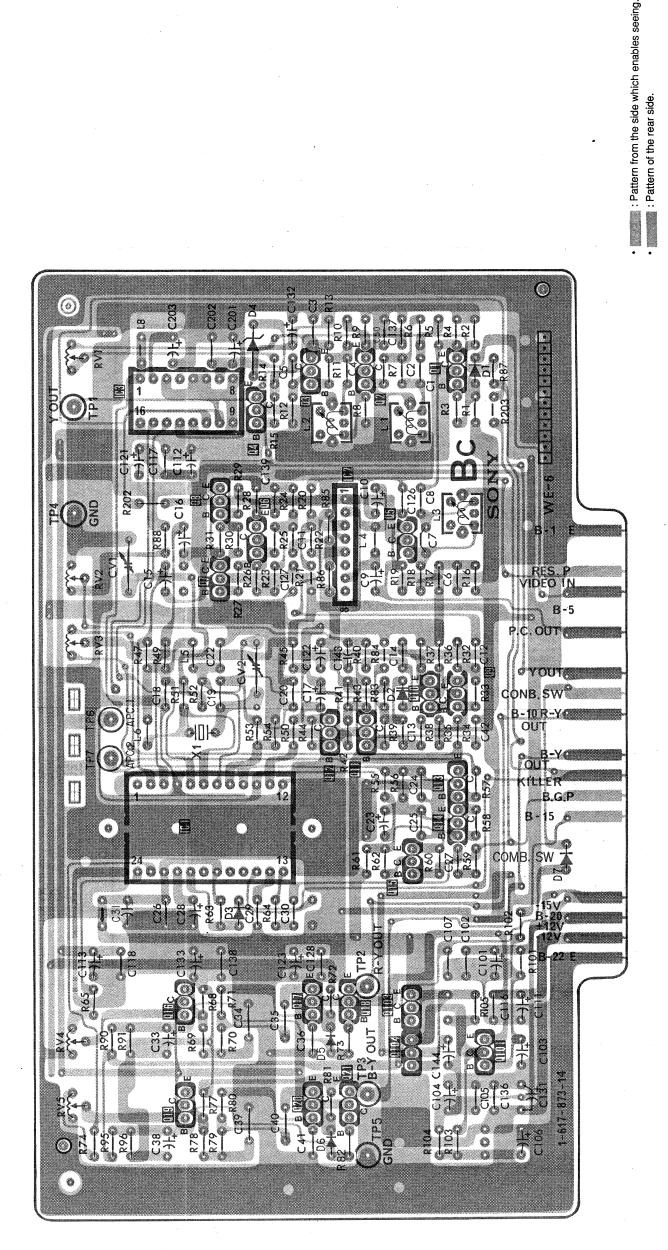
BA3 board (HOOK UP, INPUT/SYNC SELECT & SYNC SEP) (BVM-2811 ONLY)

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으	<u> </u>		٥	ADJ	且
9		103 104 105 101 102		RV101 CV102 CV101	101
-22	ZI 01 II	203 204 <sup>205</sup> 201 202	4 3	RV201 CV202 CV201	201
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<b>4</b>	5 6	403 404 405 401 402	2	RV401 CV402 CV401	401
	707 702 704 706 703 705	503 504 <sup>505</sup> 501 502	, 702 701	01 RV501 02 CV502 01 CV501	501
	712 711 715 717 716 714 713 708 71	603 604 601 601	707 705 702 706 703 701	RV601 CV602 CV601	702 701
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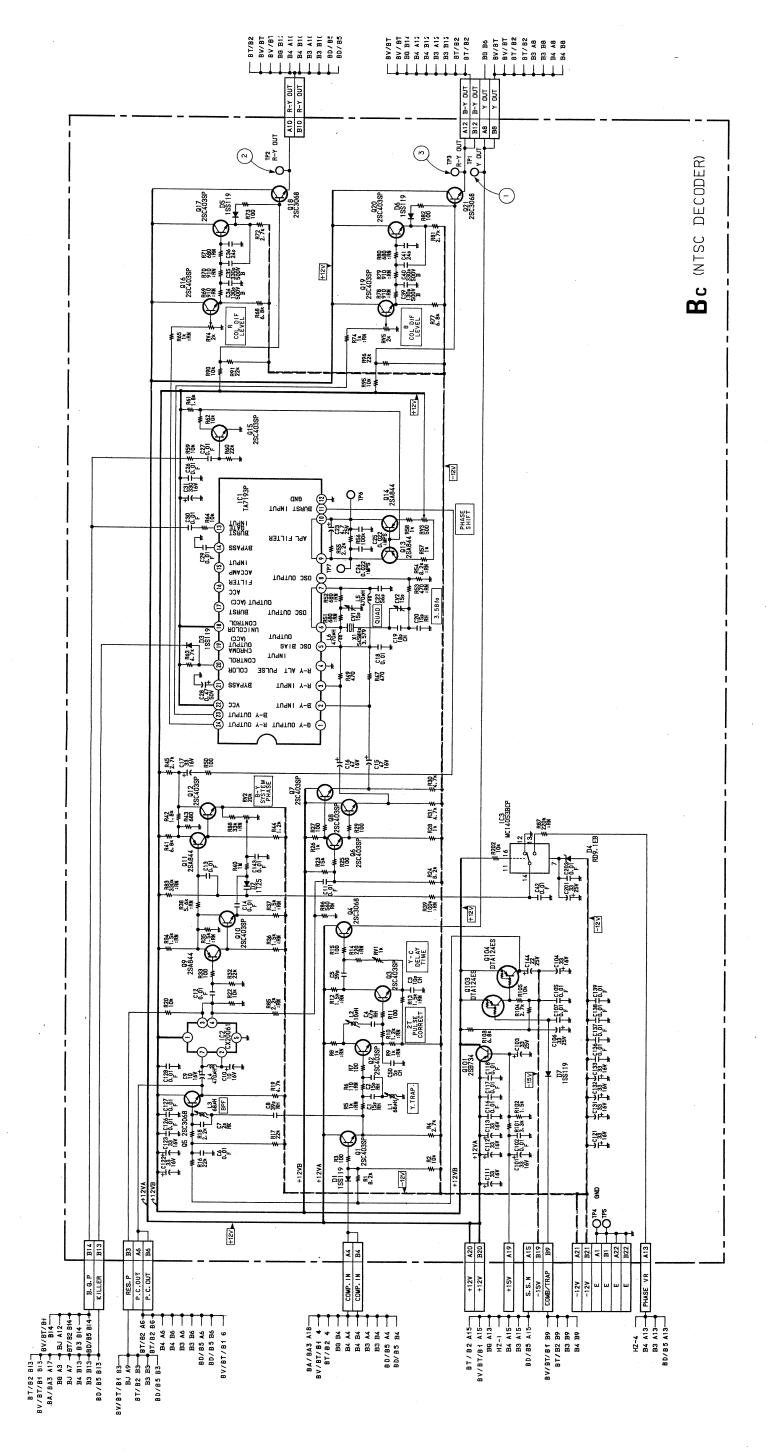
3	φ 82 –	4	TPI RVI
2	7 6 8		RV2 TP4 CVI
	2     1  3	2	TP7 TP6 RV3 CV2
	51	3 7	
	19 20 21 21 104 103 101	က	RV5 RV4 TP3 TP2
		ဖ	RV5 TP5 TP3
೨	G	۵	ADJ

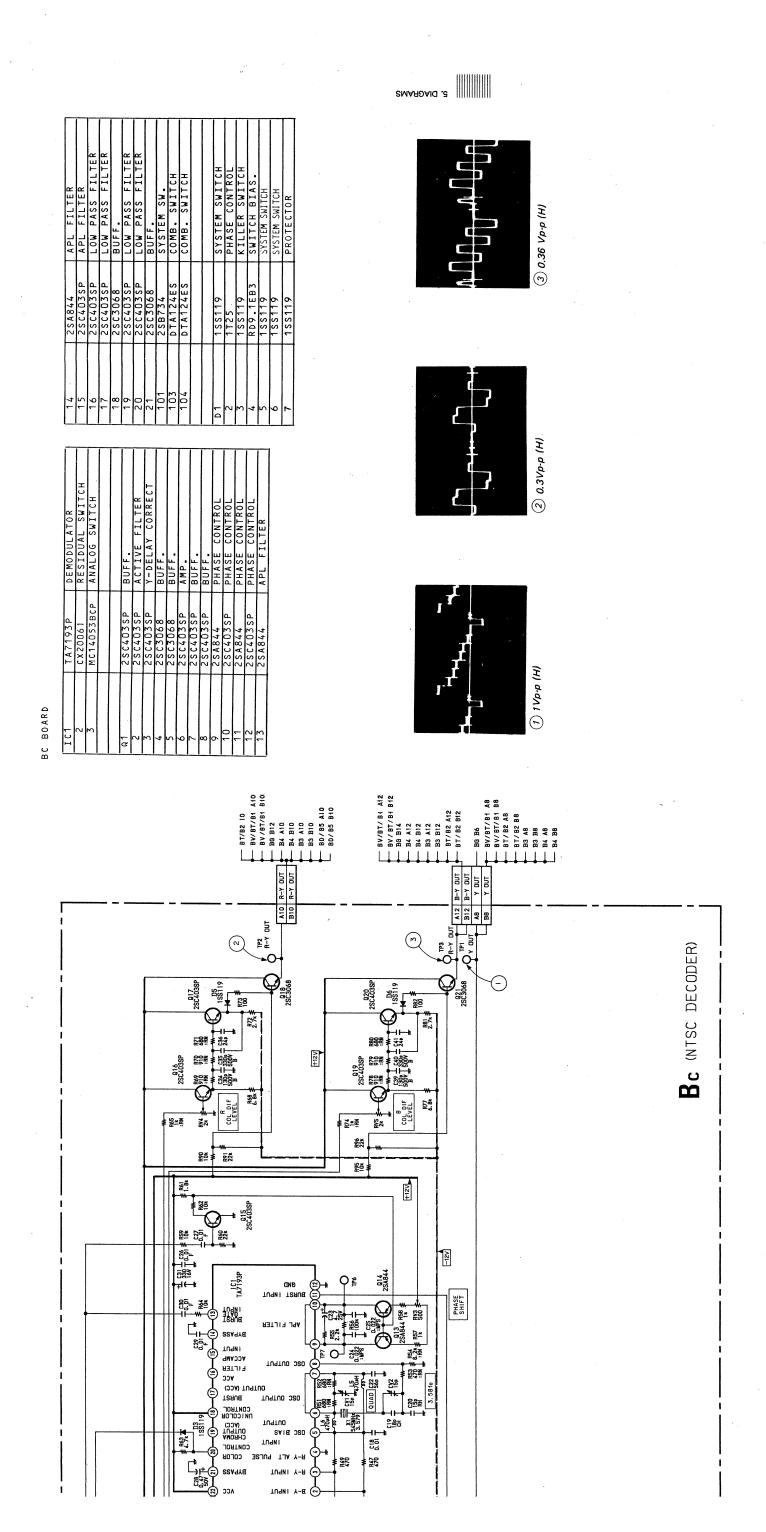


BC board (NTSC DECODER Y. TRAP) (BVM-2811/3011 ONLY)

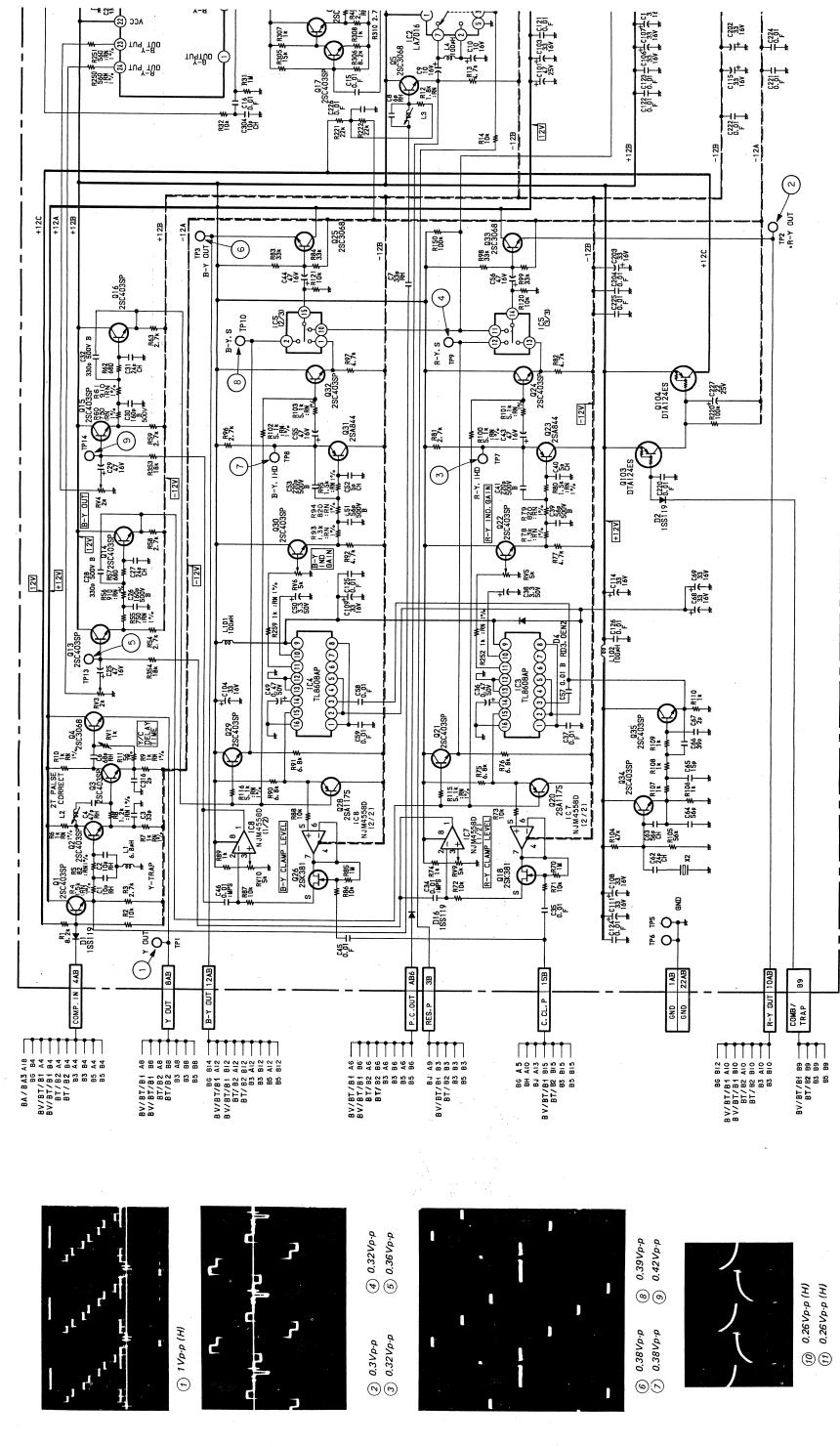
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BC

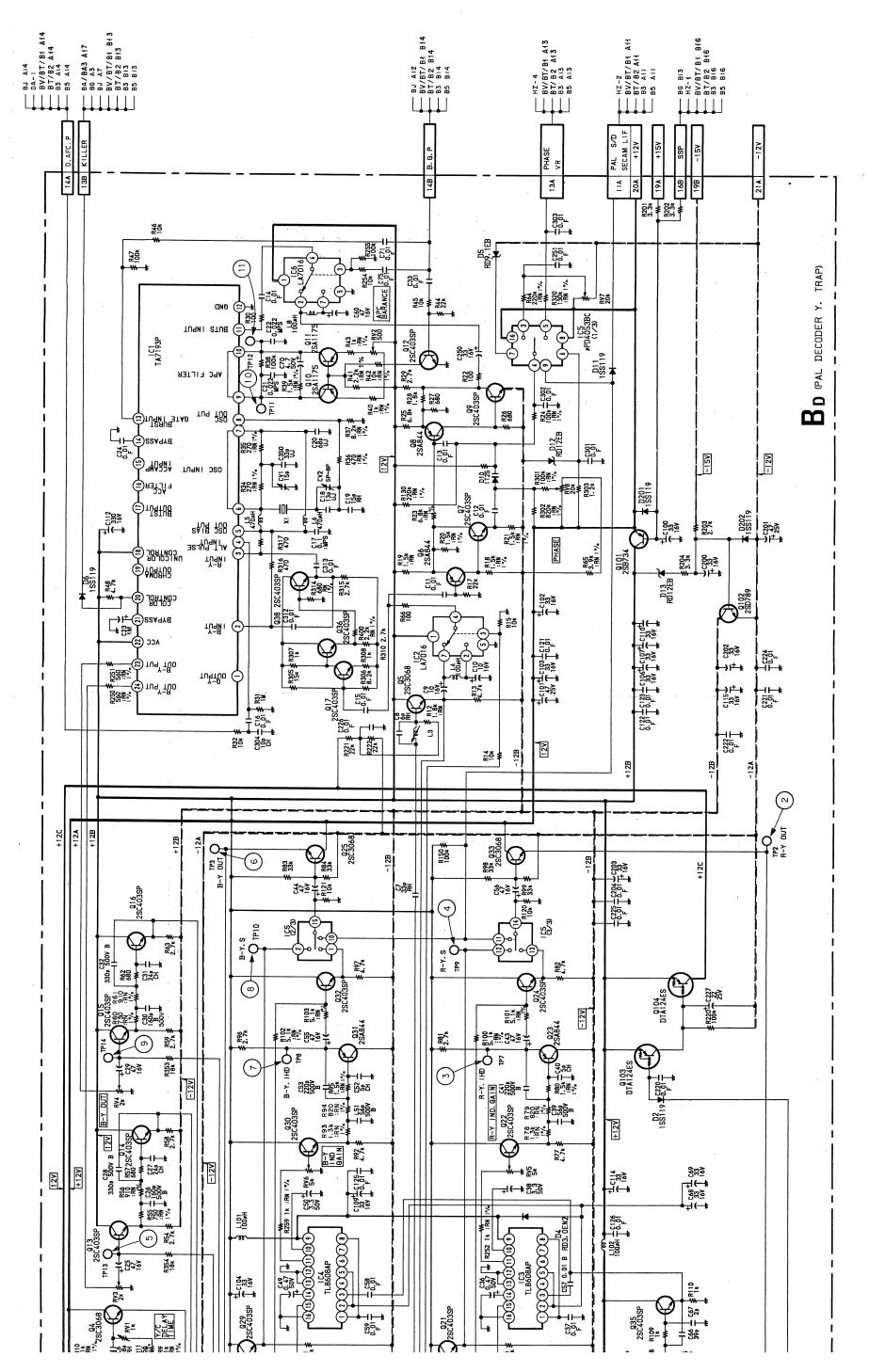








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BD BOARD

BD board (PAL DECODER Y. TRAP) (BVM-3011P ONLY)

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9	<u> </u>	38	ი დ	9		Ś	2	RV2 CV2 RV8		
		,						# N		TPII TPI2
- 2				36,17				RV3		
		13	15	- 5	9		_	CVI RV4	TP14	
<b>~</b> 8		8 14	56 16	3 2						
		21 20 18	22 29 28 2	4				TP9	RV5 RV9	RVIO TP3 TP2 TPI RVI
ю	35		24 23				2	<b>—</b>		TP7 TP6
4	34		30 24	102 104 103			202		RV6	TP8
			32 31	102	4		Ñ			TPIO
5			33	25 101	15 12	: = 2	13 201	RV7 TP5		
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			8306 017 016
10 10 10 10 10 10 10 10 10 10			H 016 H 016 H 018 H 018
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RIGG SHOW SHOW SHOW SHOW SHOW SHOW SHOW SHOW	Red COOR	1002 1002 1002 1002 1002	
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BUFFER CCD CLOCK GEN CCD CLOCK GEN BUFFER SYSTEM SWITCH SYSTEM SWITCH COMB. SWITCH 25C3068 25A844 2SC403SP NJM4558P SA1175 2SA1175 2SC403SP 2 SC403SP 2 SC403SP

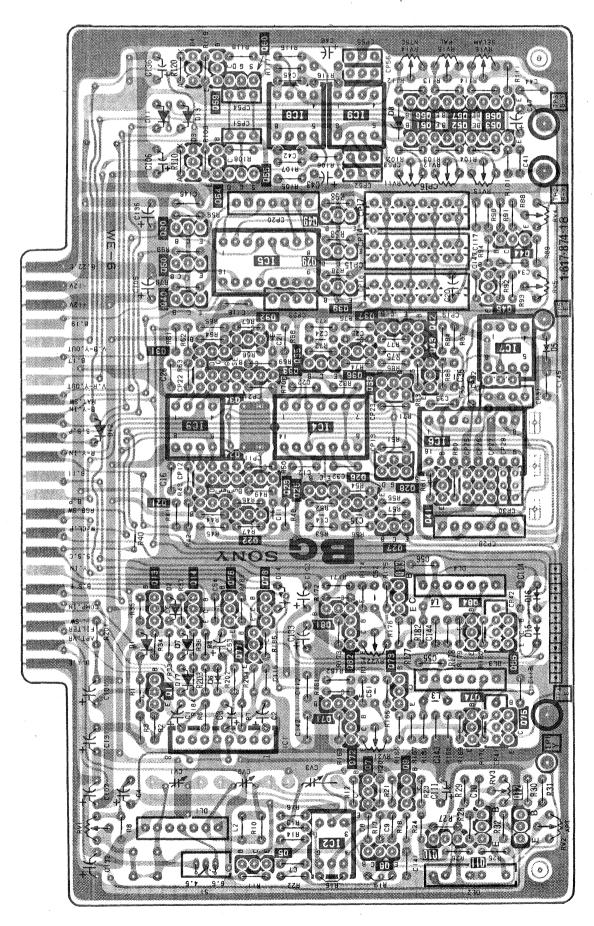
Pattern from the side which enables seeing.
 Pattern of the rear side.

5-37

: Pattern from the side which enables seeing. : Pattern of the rear side.

BG board (COLOR GAIN CONTROL, COMPONENT R-Y/B-Y AMP & DELAY, APERTURE CONTROL, Y DELAY, NTSC MATRIX SW, G-Y MATRIX AMP)

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o	5 8 7 72 71 82 81 1 13 14 14 15 14 15 15 15 15 15 15 15 15 15 15 15 15 15	21 24 22 23 25 25 27 26 28	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	54 55 49 55 5	51 56 52 57 53 58	60
۵	17 1 2 14 6 15 16	<b>Z</b> I	5	ю	=≌ &	4
TP	RVI CV3 CV3 RV3 RV2I RV2 TPI TP4		TP5 RV5	RVII RVI2 RVI3 RV4 TP2	TP3	RVI4 RVI5 RVI6

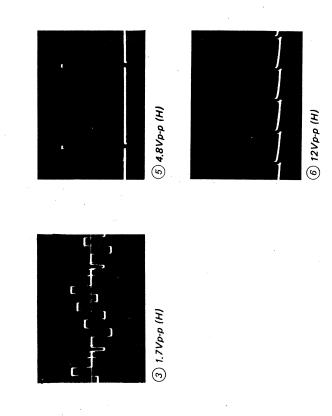


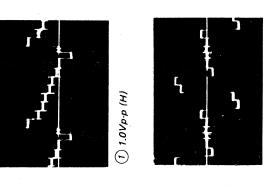
BG board (COLOR GAIN CONTROL, COMPONENT R-Y/B-Y AMP & DELAY, APERTURE CONTROL, Y DELAY, NTSC MATRIX SW, G-Y MATRIX AMP)

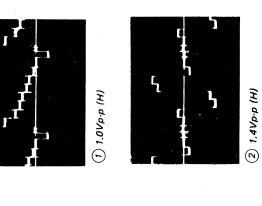
BG BOARD

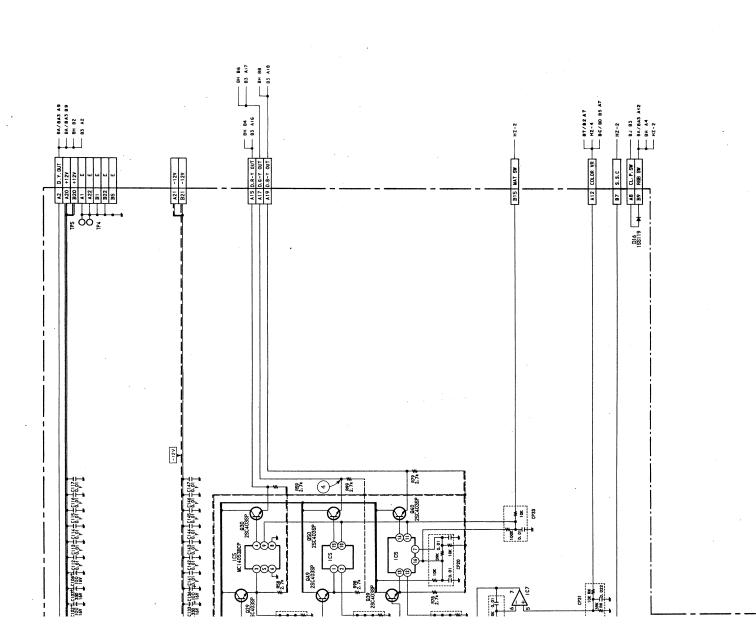
5. DIAGRAMS	

3	NJM4558D	COLOR DIFFERENCE	
		- [	
4	28		
5	MC14053BCP		
9	-	ပ	
	TL082CP	CHROMA CONTROL	-
			•
1	2SC403SP	BUFF	•
5	2SC403SP	APERTURE	•
7	2SC403SP	APERTURE	
8	2SC403SP	APERTURE	1
9	2SC403SP	Y DELAY	•
10	2SA844	Y AMP	•
11	2SC403SP	Y AMP	•
12	2SC403SP	Y AMP	•
13	2SC403SP	BUFF	
14	2803068	BUFF	
21	2SA844	R-Y AMP	<u>'</u>
22	2SC403SP		
23	2SC403SP	1	
54	2SK381	CLAMP	J
25	2SA844		-
56	2SC403SP	CHROMA	
27	2SC403SP	ı	_'
28	2SK381	ı	
29	2SC403SP	R-Y BUFF	
30	2SC403SP		
31	28A84	B-Y AMP	
32	2SC403SP		
33	2SC403SP	ı	
34	2SK381	B-Y CLAMP	
35	2SA844		
36	2SC403SP	CHROMA	
3.7	2SC403SP	CHROMA	
3.8	2SK381	CHROMA	
39	2SC403SP		
4.0	2SC403SP	B-Y BUFF	
4.1	2SA844	CHROMA CONTROL	
4.2	2SA844	CHROMA CONTROL	
4.3	2SC403SP	1	









5-42

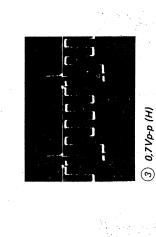
	CH IN AZZ TICH THE TOTAL T	D B-Y IN B45   150   1	D B-71   B B	Single   S	SET UP VR	(4) (4) (4) (4) (4) (4) (4) (4) (4) (4)
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TC4053B  SETE UP & COMPOSITE FR.6.B. CHANGE SW  GET UP &
SCREENING SW SET UP SW SET UP SW SERENING SW SCREENING SW AGC PULSE, SET UP, WHITE, OCOLOR DIFFERENCE & R.G.B. SCREENING PULSE GEN SCREENING PULSE SCREENING PULSE GEN SCREENING PULSE SCREENING PULSE GEN SCREENING PULSE SCREENIN
SET UP & CROSS HATCH SW SCREENING SCREENI
COMPOSITE/R.G.B. CHA SERENING SW COMPOSITE/R.G.B. CHA SERENING SW SET UP SW SERENING SW SCREENING SW SCREENING SW SCREENING SW SCREENING SW SAMPLE HOLD SLUE ONLY SW BLUE ONLY SW BLUE ONLY SW BLUE ONLY SW AGC PULSE, SET UP, W VITC INSERT GEN COLOR DIFFRENCE & R. SCREENING PULSE GEN VITC INSERT GEN COLOR DIFFRENCE & R. VITC INSERT GEN COLOR DIFFRENCE G CONTRAST CONTROL G CONTRAST CONTROL B CONTRAST CONTROL G CONTRAST & BRIGHT B CONTRAST & BRIGHT G CONTRAST & BRIGHT B CONTRAST & BRIGHT C CONTRAST & BRIGHT B CONTRAST & BRIGHT C C CONTRAST & BUITER C CONTRAST & BUTCH C C CONTRAST & BUTCH C C CONTRAST & BUTCH C C CONTRA

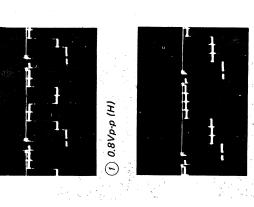
(2/2) (2/2) (3/4) (3/4) (2/4)

(2/3) (2/3) (2/3) (2/3) (2/3) (2/3) (2/3) (2/3) (3/3) (3/3) (3/3) (3/3) (3/3) (3/3) (3/3) (3/3) (3/3) (3/3) (3/3)

BOARD



12 13 14 101 102 201 202 301 301 2 3 0 1 3 0 2 3 0 4 3 0 4 3 0 4 3 0 4 3 0 4 3 0 4 4 4



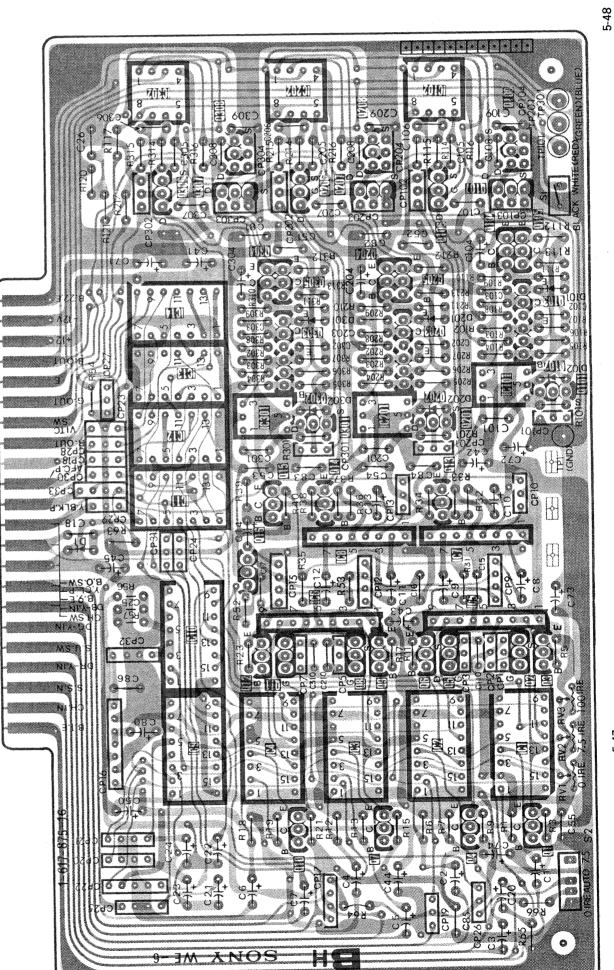
(2) 0.8Vp-p (H)

H board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)

By CH SW HZ-2 By CH SW B B12 By CL P B3 A9 B11 B.O. SW HA-3 A9 E B18 E  $\bigcirc$  $\odot$  $\bigcirc$ Q 22 GREEN 100202 100300 10030 100300 100 1C202 1L082CF (1/2) 5.01 0.208 7.018 7217 27k D302 CP203 ■ 10K R103 ₹ R104 R204 12k ≸ R203 1. 5k ≰ -12v R302 ★ 15k ★ \_ -------C26 \_R120 € R121 0.01 \_ 18k € 22k CONTROL) CP33 (CONTRAST BRIGHT -12V 013 2SA844 \$ R38 2SAB444 014 100 2SA844 2.7x ¥ 5 28C3068 ₩ 474 CP31 **Т** 음향수 2K RN R31 = 100 25 28 -12V 10 (1011) +12V Q ZSABA4. 28 122 127 ទិទ្ធិ 10,01 10,01 10,01 10,01 10,01 10,01 10,01 10,01 10,01 0.01 T 0.01 T 0.01 T 0.01 T 0.01 , 109 (-, 104 05 3BC 10.01 NW NW <u>=</u>3 \$5° B. A 10 B. SW A 14 4 B. K A 12 B. K A 12 B. K A 18 B. K CP 18 \* \* · ¥ Š # # ± 8≥ + €8 83 + €8 SON SON 50V 33.3 +16 +16 € 22k 08.5± ± % € 41SS119 +12V 0.0 F BC/BD/85 A7 SET UP VR A8 H2-1 H2-1 SET UP VR A8 H2-1 H2-1 BI3 H2-4 H2-10 BL B17 B16 H2-1 B18 CH IN AZ BA/BA3 A3 B B IN BA/BA3 B3 C, B-Y IN BA / BA3 A12 BG B9 HZ-2 B6 A15 D R-Y IN BA/BA3 B7 R IN BA/BA3 B7 C,R-Y IN B6 A19 D B-Y BV/BT/81 B15
BT/82 B15
B1 A5
B2 A5
B3 A13
B4 A13
B4 B15
B5/BD/85 B15 BA / BA3 A5 7 IN BA/BA3 A9 BA/BA3 B9 BG A2 B3 A2

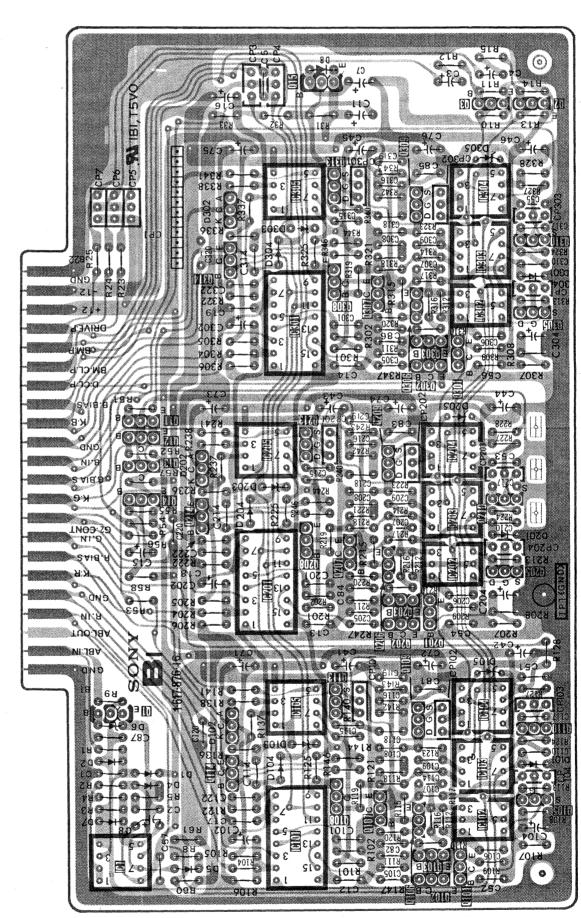
BH board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)

102 202 302	306 307 308 206 207 208 106	TP201 TP201	
12 13 14 301 201 101	304 301 302 303 305 204 201 202 203 205 104		
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	01 7 4	-	
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: Pattern from the side which enables seeing.

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101   105   201   205   301   302	305	304	313	306		000
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1		203 204	214 <sup>14</sup> 13 12 11 213	20	202 203	
101 105 102 103 104 108 113 107 108 113 107 109 101 105 110 7 2 6 5 4 1 2 6 104 102	. 201	202	208	207 202 203 206 201 205		
1 101 102 107 102 103 106 101 105 7	105		- 113	601		
	101				_	2
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Pattern from the side which enables seeing.
 Pattern of the rear side.

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BI board (DRIVE CONTROL, BEAM CURRENT CONTROL)

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TL082CP

TL082CP

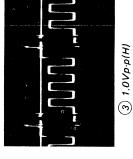
TL082CP TL082CP

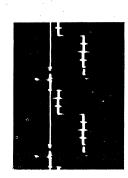
TC40538P

TL082CP

TC4053BP

	- Land American
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(1) 1.0Vp-p(H)

(2) 1.0Vp-p(H)

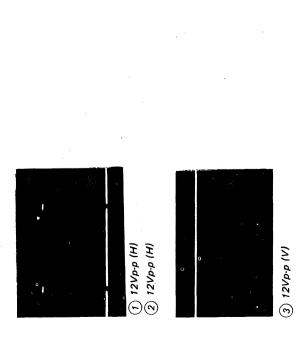
5-53

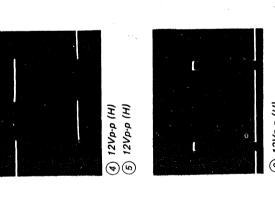
D. CL. P 64 B14 B14 CL. P 83 A19 A17 R SW HA-1 B CL. P B6 A7 B 3 B.CL. P B17 A15 B DRIVE IN (a)(b) (a)(b) (a)(c) (a 228 ¥ A19 B17 £8≩ [ 26.0 95. L 니나 없을~ HH ≢ <u>₽</u>≃ 28-25 - 25-25 - 25-C 8 as 1 8 8 8 8 HHE 1.08264 TL08264 1,0304 1,082cp ### 100. 2538 ### 100. 2538 ### 100. 2538 ### 100. 2538 ### 100. 2530 ## 28/3/341 SAMPLE-HOLD E 29/3/341 E 29/9 E 29/9 SAMPLE-HOLD
SAMPLE SAMPLE-HOLD SAMPLE-HOLD SAMPLE-HOLD S STORY R223 0,000 1,000 0.000 000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0. 10101 158119 158119 10101 10101 101020 101103 101103 778 \$ 25.28 \$ 10.00 \$ 11.00 \$ ₹235 ₹2.7% 1. 1845 1. 1847 1. 184 100 100 20308 20308 AMP AMP 2807 | 1845 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 280726888 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 28072688 | 280 #317 ¥.:\$¥ 蒙 9 \$ 17 \$ 334 813 \$ 49 R316 ≸ 3.9k ≹ وَ قِ اللَّهِ اللَّهِ

# BJ board (SYNC PROCESSING & PULSE GEN)

(122) (1018) (1018) (1018) (1018) (1018) (1018) (1018) (1018)	109 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	25	13 11 11 11 11 11 11 11 11 11 11 11 11 1
0.0000	1CSG/GZZPP (1/2)  1CSG/GZZPP (1/2)  1CSG/GZZPP (1/2)  1 CSG/GZZPP (1/2)  1 CSG/GZPP (1/2)	(1.2.2.2.3.4.4.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1	1 (22) (2/4) (1/4)
88 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	100   100	MA WEE POLICES AND LOSS AND LO	(1) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4
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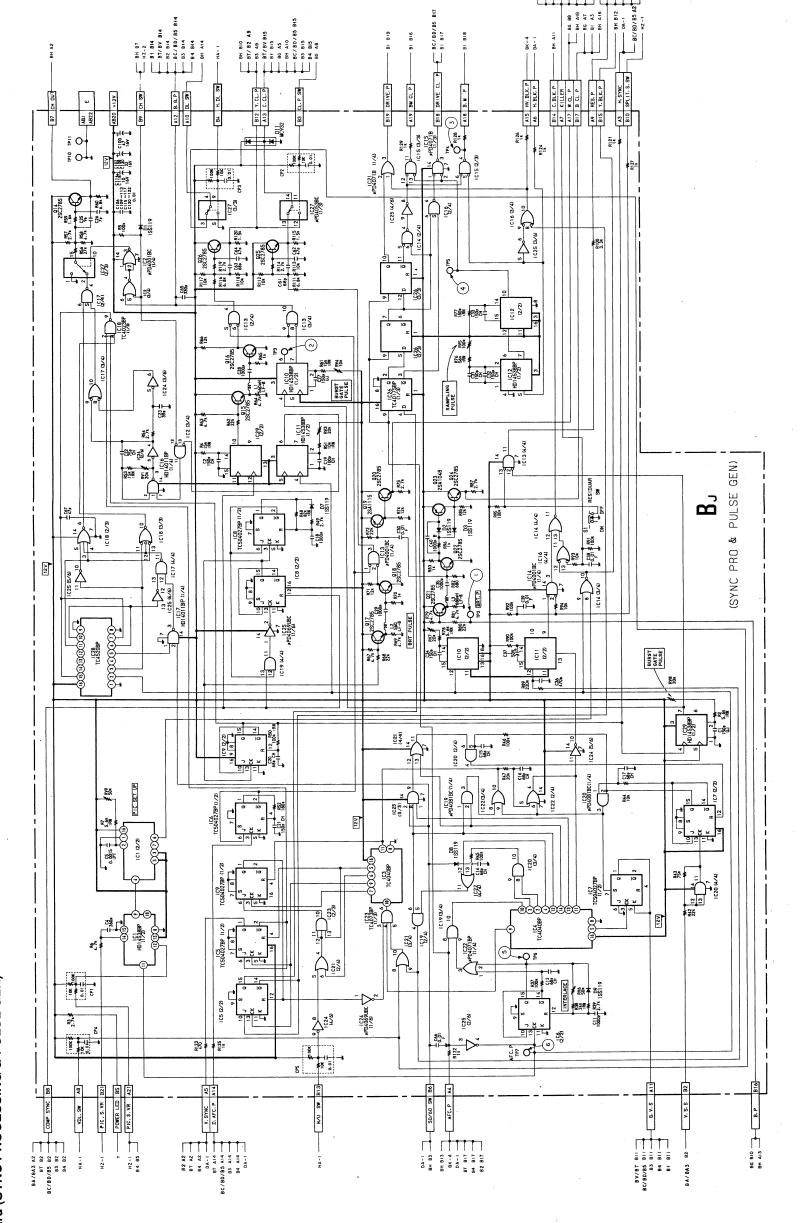
TC4040BP V SYNC & DELAY	(2/3)	TC40738P	V COUNT
V COUNT V SYNC & DELAY	24(1/5)		V SYNC & DELAY
CHROMA CLAMP PULSE GEN	(2/5)	MC14069UBCP	5
V COUNT	(5/5)		
	25(1/6)		1H PULSE PROCESS
TC50427BP V SYNC & DELAY	(3/6)	97910707	H OR V BLK.P
		200000000000000000000000000000000000000	Y CYCLE AGC & CLAMP PULSE GEN
CONCE DATED CEM	(9/9)		CROSS HATCH GEN
HD14538BP CROSS HAILE GEN C BLK PULSE GEN	56	MC14175BCP	1H PULSE PROCESS
CLAMP	27(1/3)	2017	
CHROMA CLAMP PULSE GEN	(5/2)	4033867	H OR V DI SE
B G P GEN 2	28	TC4520BP	ျပ
RESIDUAL PULSE GEN	29(1/2)	HD14538BP	B.G.P GEN 1
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SPLII 1 BLK: L BLK FULSE GEN			
V CYCLY AGC & CLAMP PULSE GEN	914	2802785	CROSS HATCH GEN
	15	2802785	
GEN	10	2877787	CUDOMA CLAMB BILLOR GEN
Y CYCLE AGC & CLAMP PULSE	oc oc	2862785	CLAMP PULSE
H OR V RIK P	19	25A1115	
1 '	20	2802785	H CYCLE
HATCH GEN	21	2802785	H CYCLE
CROSS HATCH GEN	22	28C2785	H CYCLE
V COUNT	23	25A1048	- 1
V SYNC & DELAY	47	2017107	CUDOMA CLAMB DIII CE GEN
-	26	2862785	
IN PULSE PROCESS			
V CYCLE AGC & CLAMP PULSE GEN			
	0.1	188119	CROSS HATCH GEN
V SYNC & DELAY	2	155119	H CYCLE
V COUNT		122117	411 PILL OF PROFESS
2fH MULTI	~ ~	155119	
V COUNT	0	188119	ŀΕ
VALUE OF STAN	11	MC932	PROT





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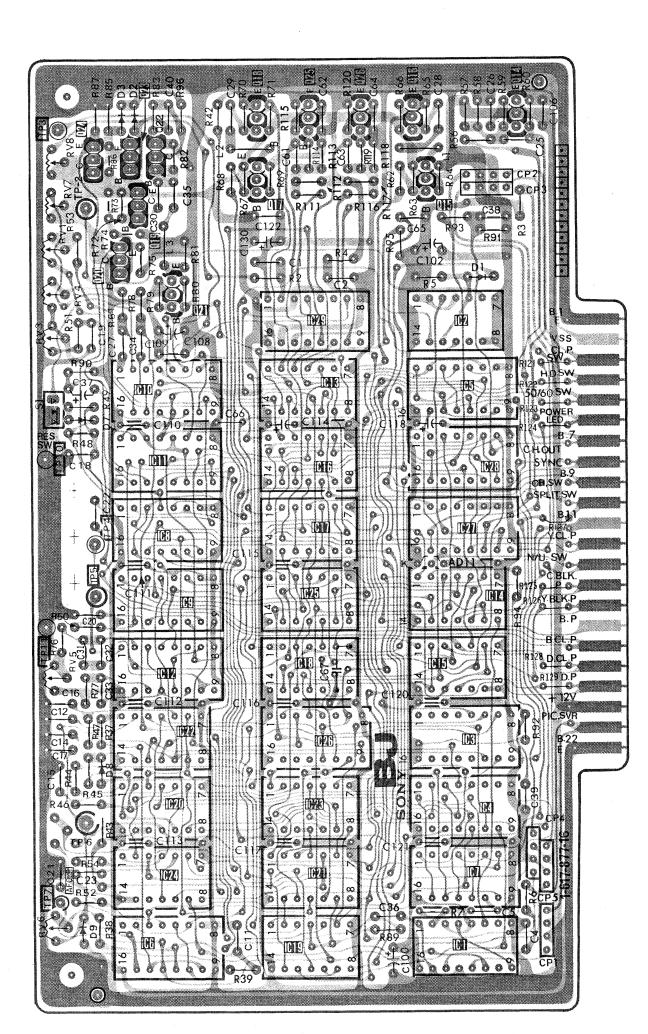


oard (SYNC PROCESSING & PULSE GEN)

5-55

BJ board (SYNC PROCESSING & PULSE GEN)

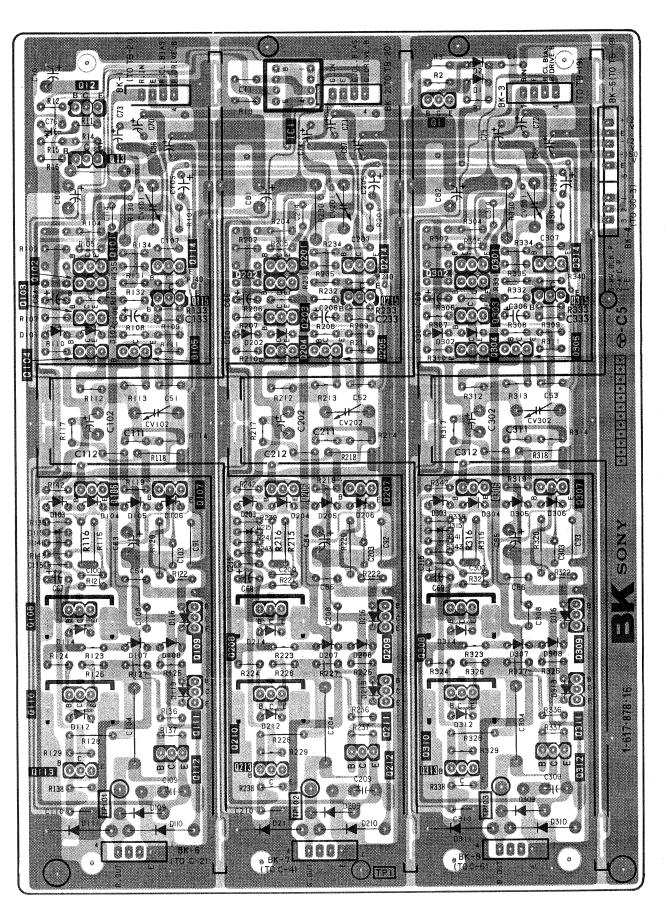
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	25 25 16 16	m0	TP3
	24 23 17 22 15		RV8
	<u>6</u>		RV7 TP2
	20		- S
	21	-	RV4
29 2			RV3
<u>೦</u> ಬ್		2	
<u>_</u> 987			TPIO
8 17	3		TP4
9 25 14	-		TPII TP5
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23 4	•		TP6
24 21			RV6 TP7
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: Pattern from the side which enables seeing.

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			CV102 CV202 CV302
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	108 109 208 209 308 309	107 114 108 116 207 214 208 216 307 314 308 316	
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	222 222 332 332 332 332 332 332 332 332	111 110 109 211 209 311 310 309	TP101 TP102 TP103
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BK board (VIDEO OUT AMP)

BK-7 6 out

> CBI 10.01 1 10 1 500V

BK-8 B OUT

(VIDEO OUT)

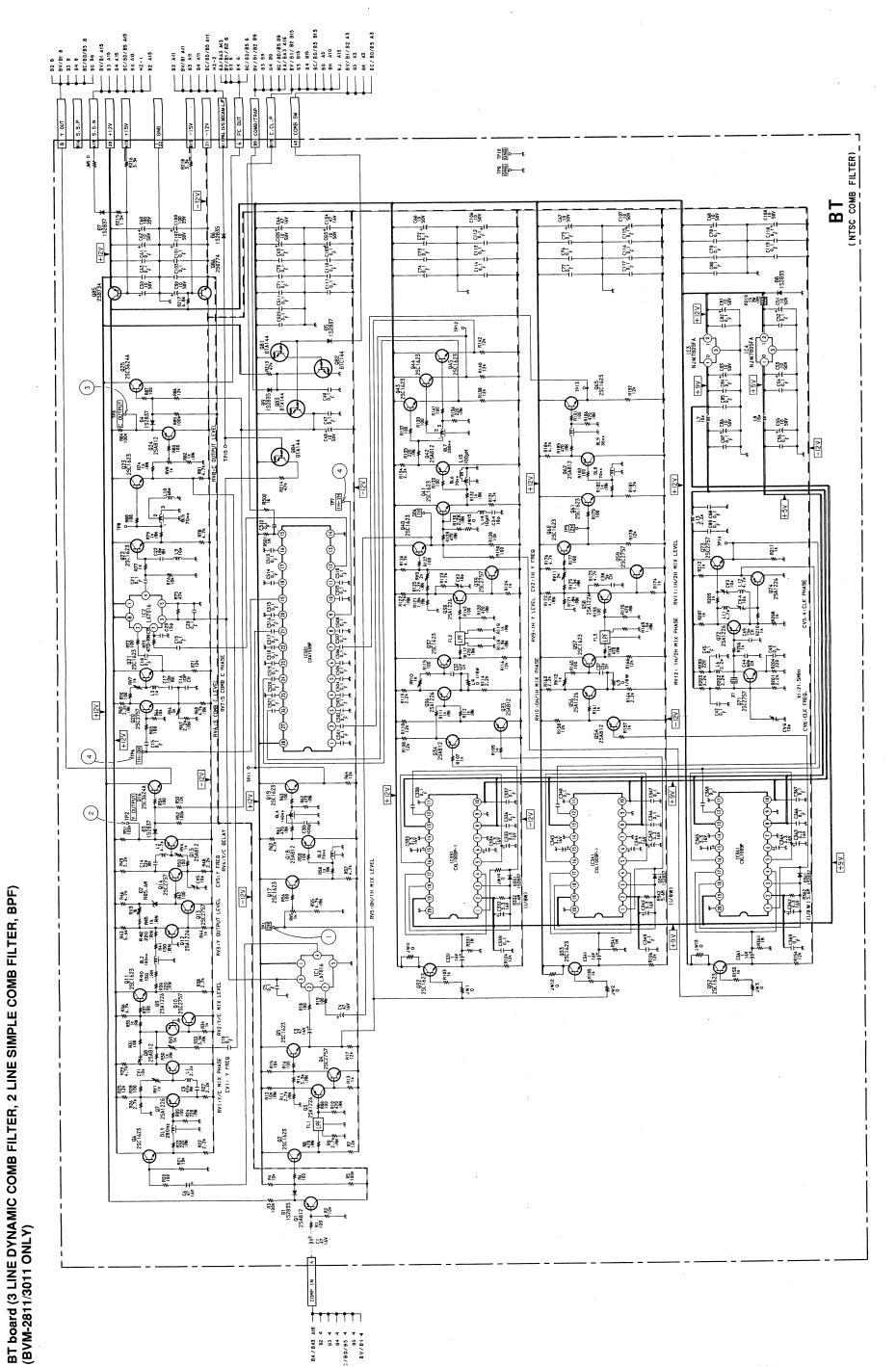
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R OUT

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10.01 1500v

SIMPLE COMB FILTER, BPF)



5-64

BT BOARD

BT board (3 LINE DYNAMIC COMB FILTER, 2 LINE SIMPLE COMB FILTER, BPF) (BVM-2811/3011 ONLY)

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Pattern from the side which enables seeing.
 Pattern of the rear side.

99-9

BT BOARD

101	LA7816	Y SELECT	090	25C1623	AMP
2	LA7816	C SELECT	6.1	2861623	BPF 140 ns DELAY (NTSC
9	NJM7809FA	9V REG	6.2	25A812	BPF 140 ns DELAY (NTSC
4	NJW7805FA	5V REG	9 9	2801623	BPF 140 ns DELAY (NTSC
331	CXL1009P	000	11	25C2757	X'TAL OSC
341	CXL1009P	000	12	2SA1226	X'TAL OSC
361	CXL1009P	000	7.3	2802757	X'TAL OSC
501	CXA1539P	CORRELATION	7.4	25A1226	X'TAL OSC
			8.1	DTA144EK	SW CONTROL
0.1	25A812	BUFFER	8.2	DIC144EK	SW CONTROL
2	25C1623	BUFFER	83	DIA144EK	SW CONTROL
3	2SA1226	AWP	8.4	DTA144EK	SW CONTROL
4	28C2757	AWP	8.5	258734	SW CONTROL
5	25C1623	AMP	98	280774	
9	2501623	Y DELAY			
7	2SA1226	Y DELAY	0 1	152835	N.S.
8	25A812	Y DELAY	2	RDS. 6MB2	DC SHIFT
6	2SA1226	Y/C MIX	3	152837	
1 0	2862757	Y/C MIX	4	152837	300
=	25C1623	AMP &	5	152837	SW CONTROL
1.2	2SA1226	Y AMP & BUFFER	9	152835	SW CONTROL
13	25C2757	Y AMP & BUFFER	7	152837	SW CONTROL
1.4	25C2757	Y DELAY	80	152835	SW CONTROL
1.5	25A812	Y DELAY	6	152835	SW CONTROL
16	25C3624A	BUFFER & SW	331	152837	CLAMP
1.1	2SC1623	BPF 140 nsec(NTSC)110 nsec(PAL)	341	152837	CLAMP
1.8	25A812	BPF 140 nsec(NTSC)110 nsec(PAL)	361	152837	CLAMP
1.9	25C1623	BPF 140 nsec(NTSC)110 nsec(PAL)			
2.0	2802757	1			
2.1	2SC1623	S COMB C LEVEL, PHASE			
22	25C1623	BPF, BUFFER			
2.3	2501623	BPF, BUFFER			
2.4	25A812	BPF, BUFFER			
2.5	2SC3624A	BUFFER & SW			
3.2	25C1623	1H DELAY(NTSC)2H DELAY(PAL)			
33	25C1623	IH DELAY (NTSC) 2H DELAY (PAL)			
3.4	25A812	1H DELAY (NTSC) 2H DELAY (PAL)			
3.5	25A812	IH DELAY(NTSC)2H DELAY(PAL)			
36	2SA1226	IH DELAY(NÌSC)2H DELAY(PAL)			
37	2SC1623	AWP			
3.8	2SA1226	AWP			
3.9	25C2757	AUP			
4.0	25C1623				
41	25C1623	140 ns DELAY (NTSC) 110			
4.2	25A812				
43	2SC1623	BPF 140 ns DELAY (NTSC) 110 ns DELAY (PAL)			
4.4	2SC1623	BPF 140 ns DELAY (NTSC) 110 ns DELAY (PAL)			
4.5	25C1623	BPF 140 ns DELAY (NTSC) 110 ns DELAY (PAL)			
5.2	25C1623	TH DELAY(NTSC)2H DELAY(PAL)			
5.4	25A812	1H DELAY(NTSC)2H DELAY(PAL)			
5.6	25A1226	TH DELAY(NTSC) ZH DELAY(PAL)			
5.7	25C1623	AWP			
5.8	25A1226	AMP			
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RV6

RV7

RV8

RV9 RV5 RVII

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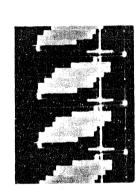
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40 60

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① 1.1 Vp-p(H)

② 0.95 Vp-p(H)

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3 0.58 Vp-p(H)4 1.9 Vp-p(H)

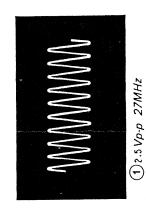
: Pattern from the side which enables seeing.

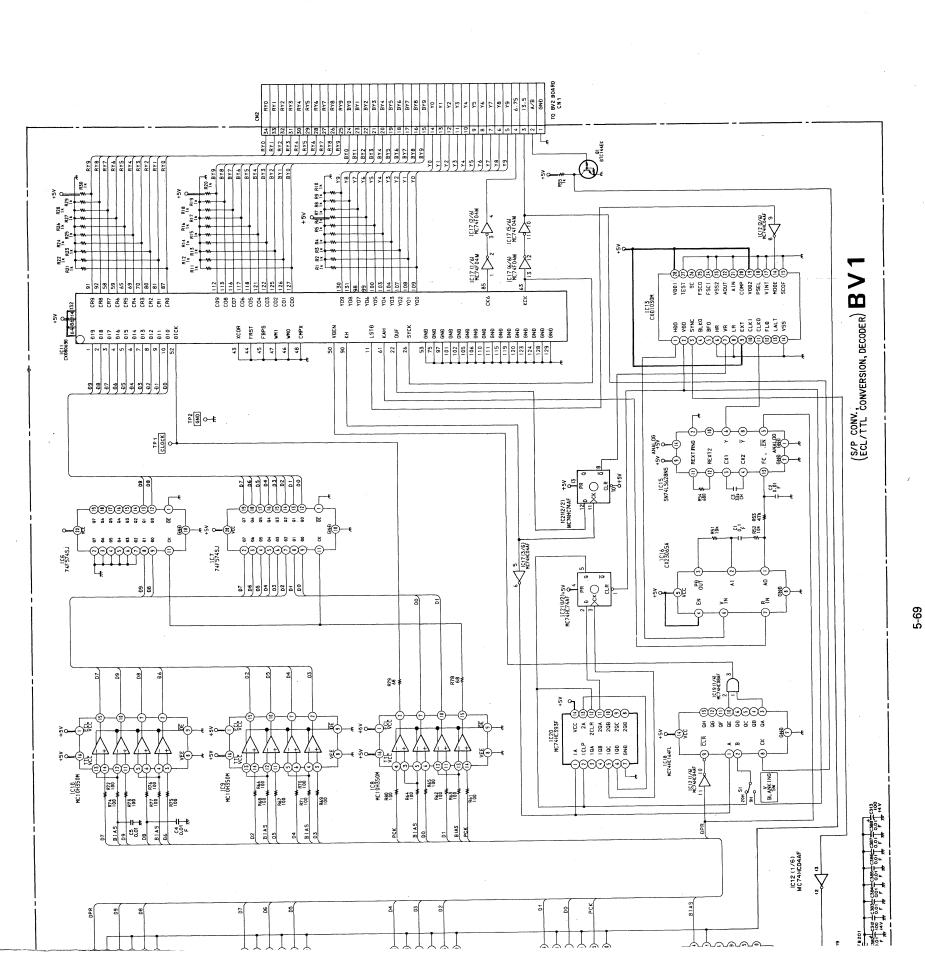
(SCL/TTL CONVERSION, DECODER) BV HDD VDD SYNC BLKD BFD HR VR CLKI CLKI CLKI CLKO FLD FLD XCOR FBPS WM1 VĐEN KH LST8 KAH OUF SYCK FP GND Z+ TP 1 CLOCK CX2 \* \* —1⊢ 2<u>°</u>° 282 4 #S4 889 -0000000000 752 1982 1982 CX23065A 8 8 1C21(1/2)+5v MC74HC74AF 89 88 888 1C20 HC74HC393F H 9 9 9 9 8 4 2A 2CLR 2GLR 2GB 2GC 2GC 2GG 1 A 1 CLP 1 OB 1 OB 1 OB 1 OB 6ND 1C18 MC74HC164FL 1C8 MC10H350M 1000 R71 R70 20H SI 9H O BLANKING R77 R76 100 100 1C9 HC1 0H350H 265 100 **3**60 3 873 002 255 ±250 285 BIAS IC12 (1/6) MC74HC04AF JC3 MC74HC4053F 1C4 HC74HC4053F 1C1 HC74HC4053F EVRA DB4 BPRA PCKB RII3 RII5 RII7 R IN IN IN RII8 IN IN IN IN C212  $\mathbb{Q}$ R226 4.3k R238 C203 16V PCK SYNC EVR 65 65 65 65 65 65 65 65 SYNC SYNC EVA R124 5.68 SBX-1602A SBX-1602A 569 C213 FIREO CERTER RIVERS CERTER RIV 722 R121 220 8120 220 FR. 18.201 R205 1 R P. 18.201 P. 18. 28 A1X C207 C107 A 100 CA 

BV1 board (S/P CONVERTER, CABLE DRIVER, ECL/TTL CONV, D-1 DECODER, COMP SYNC GEN) (BVM-2811 ONLY)

**BV1 BOARD** 

2	MC74HC4053F	A/B SWITCH
2	MC74HC4053F	A/B SWITCH
ဇ	MC74HC4053F	A/B SWITCH
4	MC74HC4053F	A/B SWITCH
သ	MC74HC4053F	A/B SWITCH
9	74F574SJ	BUFFER
7	74F574SJ	BUFFER
8	MC10H350M	ECL→TTL CONVERTER
6	MC10H350M	ECL→TTL CONVERTER .
10	MC10H350M	ECL→TTL CONVERTER
F	CXD8069BG	D-1 DECODER
12	MC74HC04AF	INVERTER
13	CXD1030M	SYNC GENERATOR
15	SN74LS638NS	VCO
16	CX23065A	PHASE COMPARATOR
17	MC74F04M	INVERTER
18	MC74HC164FL	H-V BLANKING GEN
19	MC74HC08AF	AND GATE
20	MC74HC393F	H-V BLANKING GEN
21 (1/2)	MC74HC74AF	H-V BLANKING GEN
21 (2/2)	MC74HC74AF	V.RESET
101	SBX1602A	S/P CONVERTER
102	TC7S00F	INPUT DETECTION
201	SBX1602A	S/P CONVERTER.
202	TC7S00F	INPUT DETECTION
301	PST529C	RESET
σ	DTC144EK	A/B CONTROL
101	2SC2351	CABLE DRIVER
102	2SC2351	CABLE DRIVER
103		CABLE DRIVER
104	2SC1623	
201	2SC2351	CABLE DRIVER
202	2SC2351	CABLE DRIVER
203		CABLE DRIVER
204	2SC1623	
301	DTA144EK	RESET





BV1 board (S/P CONVERTER, CABLE DRIVER, ECL/TTL CONV, D-1 DECODER, COMP SYNC GEN) (BVM-2811 ONLY)

21				CAD 1-438-014-13 A-1130- 9
10	0	ADV	TP	
	21	Арл	TP	21-12-12-12-12-12-12-12-12-12-12-12-12-1
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BV2 board (BUFFER & DELAY, D/A CONV, Y AMP, R-Y/B-Y AMP & DELAY) (BVM-2811 ONLY)

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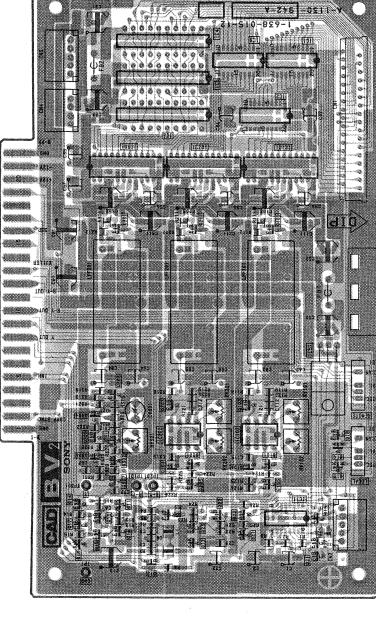
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6 CS 8			
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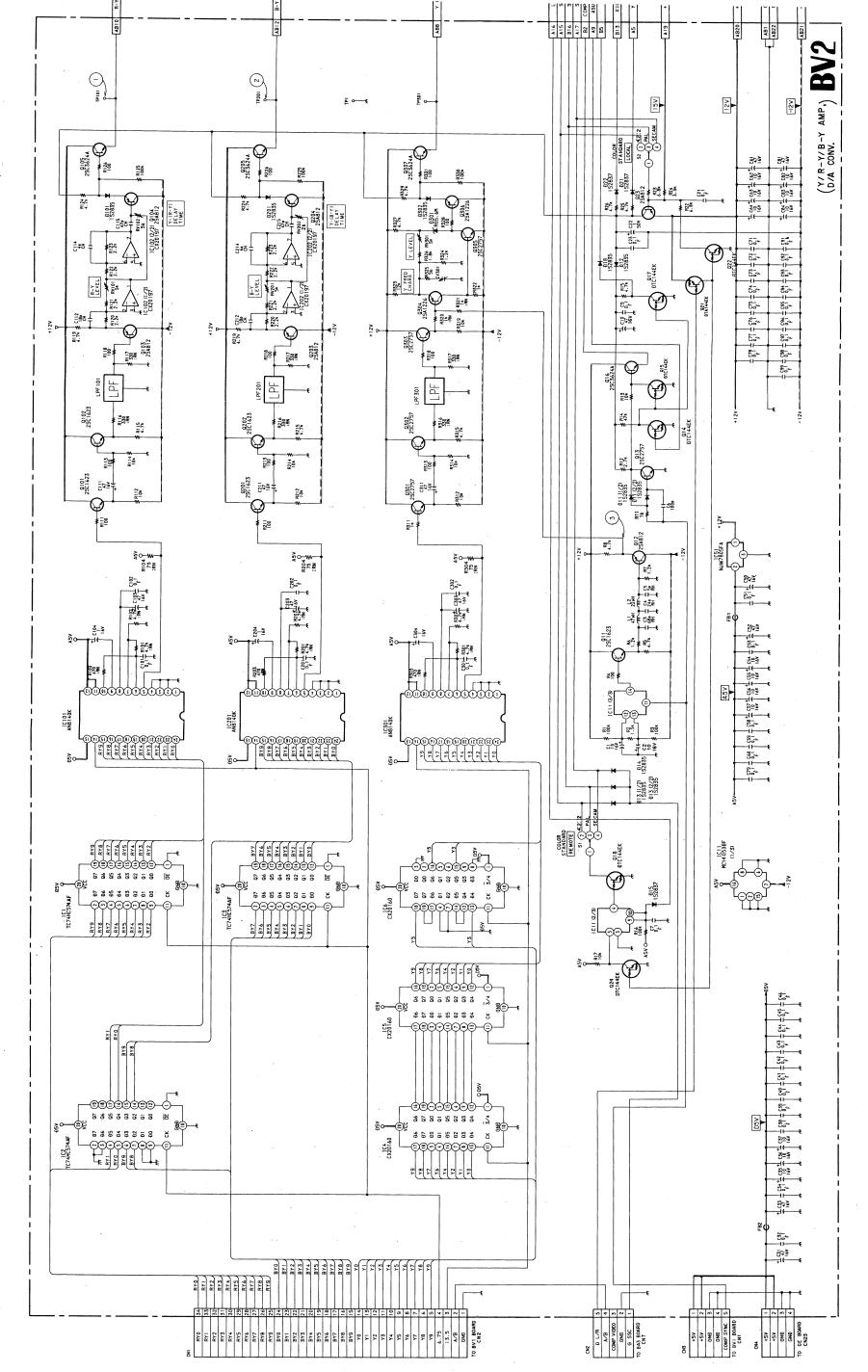


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: Pattern of the rear side.

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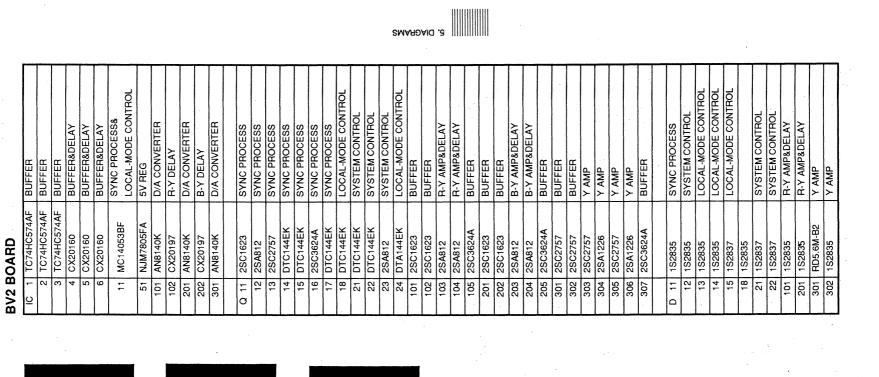
Y AMP, R-Y/B-Y AMP & DELAY)

BV2 board (BUFFER & DELAY, D/A CONV, (BVM-2811 ONLY)



2-7

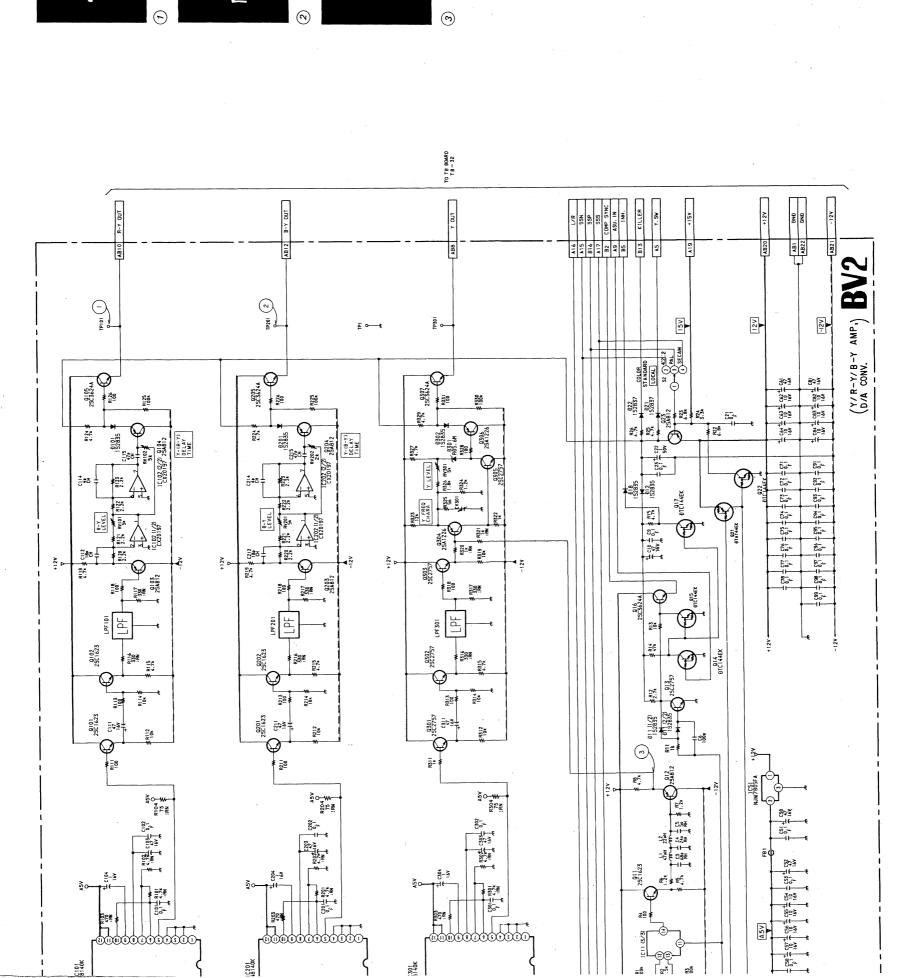
3V2



1Vp-p (H)

3.8Vp-p (H)

3Vp-p (H)



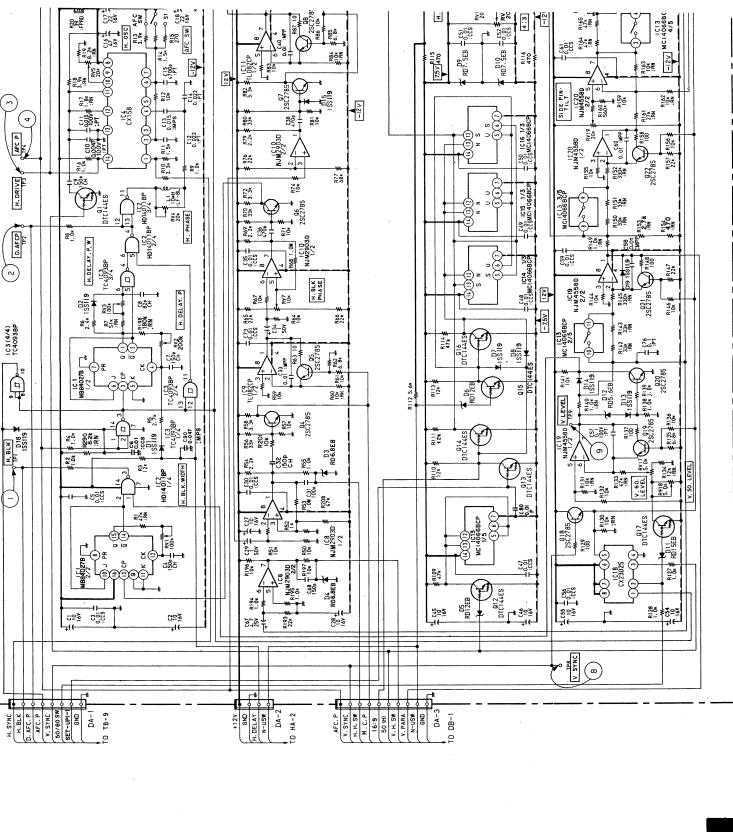
2-77

(m)

1C3(4/4) TC4093BP

DE SERVICE SE	MB840278	I H BI K WIDTH	8	81 2SC2785	T&B PIN. GEN.	
2		H. DELAY. POSITION	6	9 25C3068	T&B PIN. GEN.	
3		BUFFER	10	10 2SC2785	T&B PIN. MOD.	
4	CX-158	H. OSC AFC				
2	TL082CP	H. LIN. GEN.	12	12 DTC144ES	50/60 SW	
٩	TL082CP	H. LIN. GEN.	13	13 DTC144ES	SCAN. SW	
_	.1	H. LIN. MOD.	14	14 DTC144ES	SCAN. SW	
8	NJM2903D	1/2H, 1/2V. GEN.	15	15 DTC144ES	SCAN. SW	
6	TL082CP	H. BLK. PHASE	16	16 DTC144ES	SCAN. SW	
10	NJM2903D	T&B. H. PHASE	17	17 DTC144ES	50/60 SW	
Ξ	TL082CP	T&B PIN. GEN.	18	18 2SC2785	BUFFER	٠.
12		T&B. PIN MOD.	19	19 2SC2785	V. SAW. GEN	
13	uPD4066BC	50/60 SW.	20	20 2SC2785	V. SAW. CLIP	
4	uPD4066BC	DEF. LEVEL. SW	21	21 2SC2785	SIDE PIN GEN	
15		DEF. LEVEL. SW	22	22 2SC2785	SIDE PIN GEN	
16	uPD4066BC	DEF. LEVEL. SW	23	23 2SC2785	SIDE PIN GEN	
17		BUFFER	24	24 2SC2785	V. SAW GEN.	
18	NJM4558D	50/60 SELECTOR	31	31 DTC144ES	V. LIN GEN	
6	NJM4558D	V. SAWTOOTH. GEN.	32	32 DTC144ES	H.LIN SW	
8	NJM4558D	SIDE. PIN. GEN.				
21	NJM4558D	SIDE. PIN. GEN.	0	1SS148	H.DELAY SW	
22		V.SAWTOOTH GEN.	2	1SS148	H.DELAY SW	
23	NJM4558D	BUFFER	ဗ	RD6.8EB3	CLIPPER	
24	LM7812CT	+12V REG.	4		CLIPPER	
25		-15V REG.	2		50/60 SW	
26		BUFFER	9		SCAN SW	
			7	15S148	SCAN SW	
0	DTC144ES	H. OSC. SW	8	1SS148	SCAN SW	
2	2SC2785	H. LIN. GEN	6	RD7.5E-83	+7.5V REG.	
3	2SC2785	H. LIN. GEN	0	RD7.5E-83	-7.5V REG.	
4		1/2H. P. GEN.	=	RD15E-B3	50/60 SW.	
2		H. BLK. GEN.	12	RD5.6E-B2	V. SAW. CLIP	
9	2SC2785	H. BLK. GEN.	13	15S148	V. SAW. CLIP	
7	2SC2785	T&B PIN. PHASE	14		V. SAW. CLIP	
			15	155148	AFC. CLIP	
			ç	40 400140	TODO	

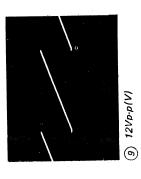
		,												٠																							
T&B PIN. GEN.	T&B PIN. GEN.	T&B PIN. MOD.		50/60 SW	SCAN. SW	SCAN. SW	SCAN. SW	SCAN. SW	50/60 SW	BUFFER	V. SAW. GEN	V. SAW. CLIP	SIDE PIN GEN	SIDE PIN GEN	SIDE PIN GEN	V. SAW GEN.	V. LIN GEN	H.LIN SW		H.DELAY SW	H.DELAY SW	CLIPPER	CLIPPER	50/60 SW	SCAN SW	SCAN SW	SCAN SW	+7.5V REG.	-7.5V REG.	50/60 SW.	V. SAW. CLIP	V. SAW. CLIP	V. SAW. CLIP	AFC. CLIP	PROT		PROT
8 2SC2785	9 25C3068	10 2SC2785			13 DTC144ES	14 DTC144ES	15 DTC144ES			18 2SC2785	19 2SC2785	20 2SC2785	21 2SC2785	22 2SC2785				32 DTC144ES		D 1 1SS148		3 RD6.8EB3	4 RD6.8EB3	5 RD12E-B3	6 RD12E-B3	7 15S148	8 15S148	9 RD7.5E-B3	10 RD7.5E-B3	11 RD15E-B3	12 RD5.6E-B2	13 15S148	14 15S148	15 15S148	18 1SS148	19 15S148	31 WG713A
H. BLK. WIDTH	H. DELAY. POSITION	BUFFER	H. OSC AFC	H. LIN. GEN.	H. LIN. GEN.	H. LIN. MOD.	1/2H, 1/2V. GEN.	H. BLK. PHASE	T&B. H. PHASE	T&B PIN. GEN.	T&B, PIN MOD.	50/60 SW.	DEF. LEVEL. SW	DEF. LEVEL. SW	DEF. LEVEL. SW	BUFFER	50/60 SELECTOR	V. SAWTOOTH. GEN.	SIDE. PIN. GEN.	SIDE. PIN. GEN.	V.SAWTOOTH GEN.	BUFFER	+12V REG.	-15V REG.	BUFFER		H. OSC. SW	H. LIN. GEN	H. LIN. GEN	1/2H. P. GEN.	H. BLK. GEN.	H. BLK. GEN.	T&B PIN. PHASE				
IC 1 MB84027B	2 HD14011BP	3 TC4093BP	4 CX-158	5 TL082CP	6 TL082CP	7 MC1496P	8 NJM2903D	9 TL082CP	10 NJM2903D	11 TL082CP	12 MC1496P	13 uPD4066BC	14 uPD4066BC	15 uPD4066BC	16 uPD4066BC	17 NJM4558D	18 NJM4558D	19 NJM4558D	20 NJM4558D	21 NJM4558D	22 NJM4558D	23 NJM4558D	24 LM7812CT	25 LM2912CT	26 TL082CP		Q 1 DTC144ES	2 2SC2785	3 2SC2785	4 2SC2785	5 2SC2785	6 2SC2785	7 2SC2785				



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(V) 9VP-P (V)







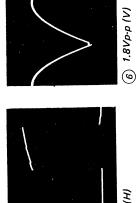
(8) 12Vp-p (V)

5 4.5Vp-p (H)

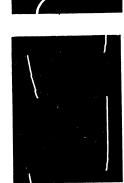
(2) 14Vp-p (H)















5-79

(7) 2.5Vp-p (V)

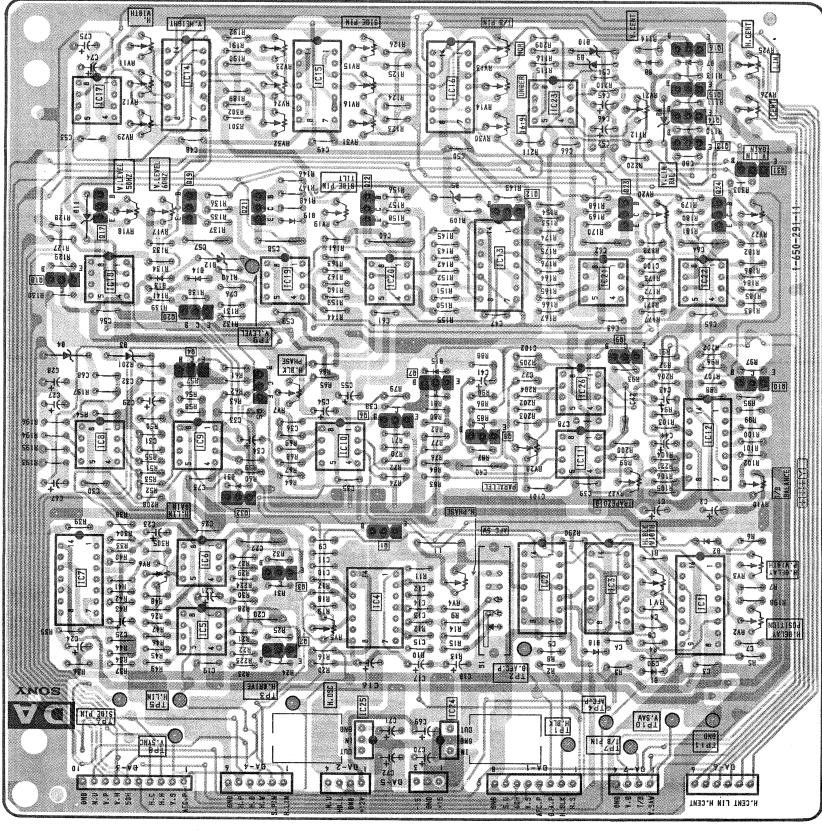
(4) 10Vp-p (H)

(1) 14Vp-p (H)

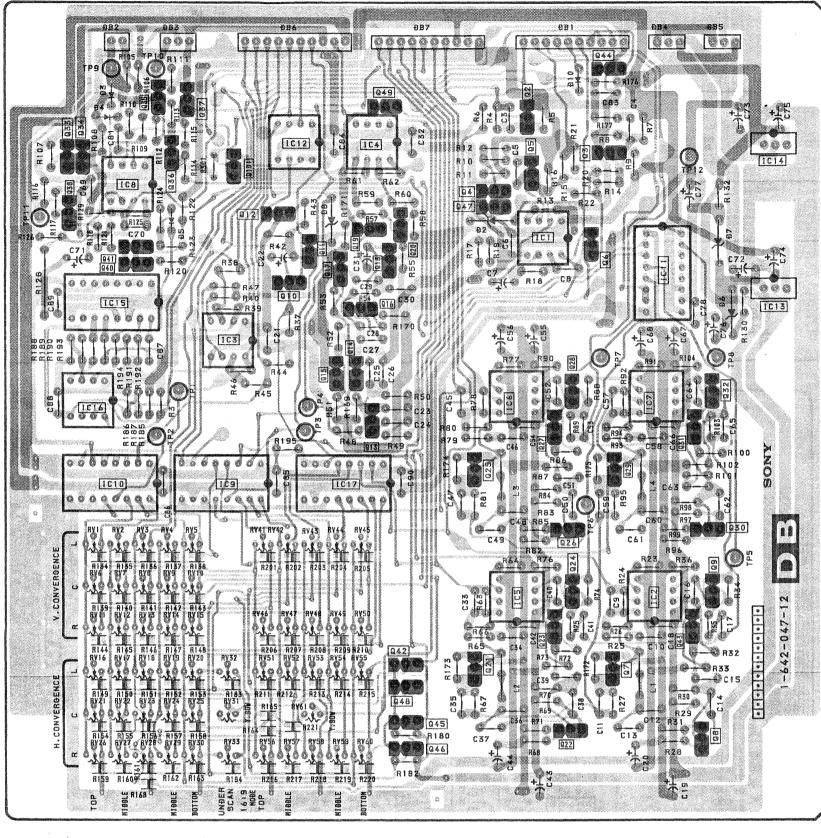
DA board (DEFLECTION WAVEFORM)

DA board (DEFLECTION WAVEFORM)

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TP ADJ	TP6 RVIB RV29 RVI2 RVII RV6 TP8 RV I7	TP9  RV32 RV24 RV23 TP3 RV7 RV5	RV31 RVI6 RV15	RV30 RVI4 RVI3 TP2 RV28 TP1 TP4 TP7 RV27 RV21	RVI RV20 TPI0 TPII RV2 RV3 RVI0 RV22 RV26 RV25	TP ADJ
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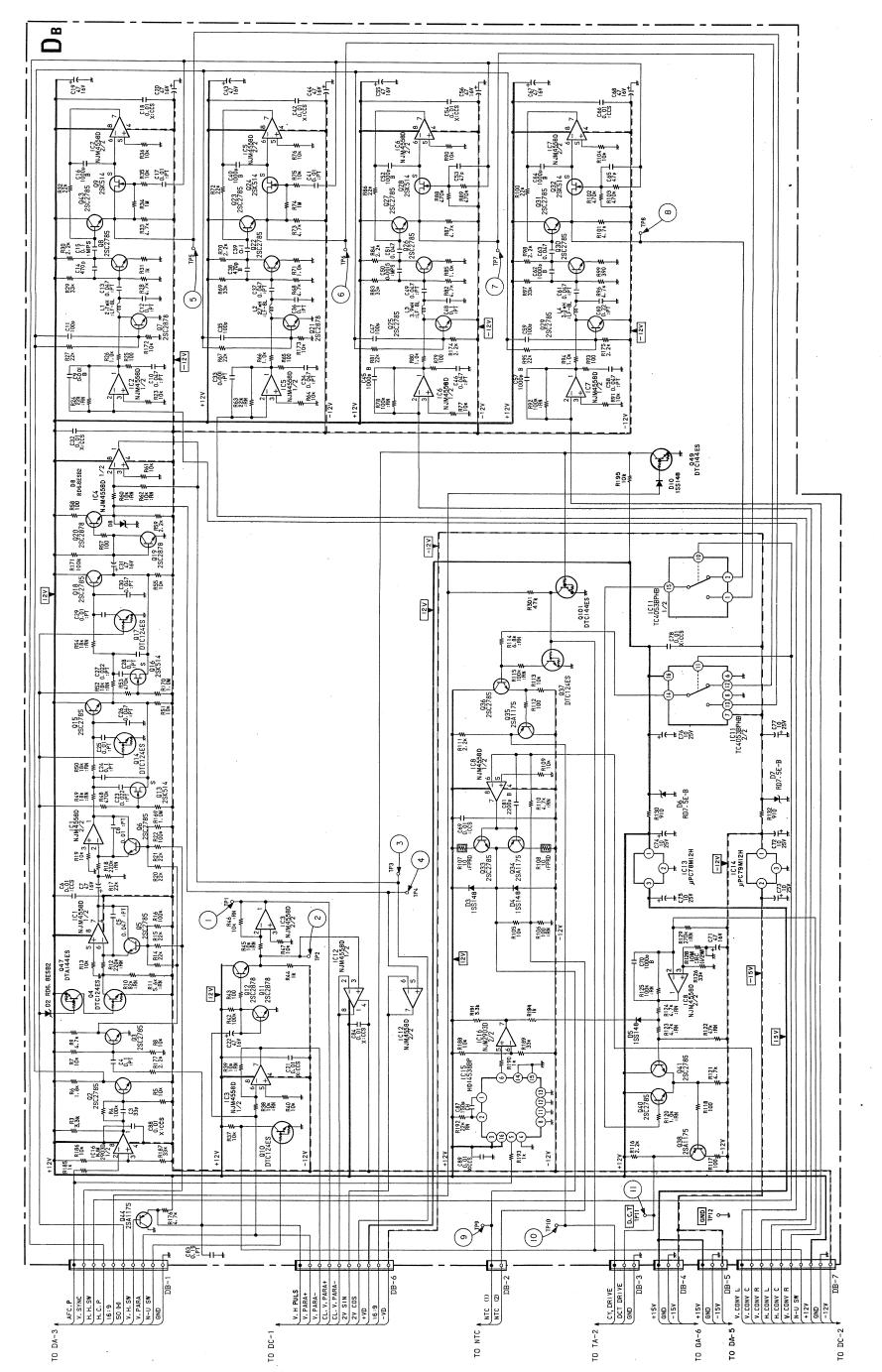
DB board (CONVERGENCE WAVEFORM)



: Pattern from the side which enables seeing.
: Pattern of the rear side.

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DB board (CONVERGENCE WAVEFORM)



5-85

									1																				
BUFFER H. SW	АМР	H. CLAMP	H. CLAMP	H. SW	AMP	H. CLAMP	H. CLAMP	H. SW	AMP	H. CLAMP	H. CLAMP	N.T.C AMP	N.T.C AMP	BUFFER	BUFFER	N/U SW	BUFFER	ADDER	ADDER	H.CLAMP	BUFFER	16:9 SW	INVERTER	N/U SW	LEVEL SHIFT	PROTECTER	PROTECTER	DC STOPPER	+7.5V REG.
2SC2878 2SC2878	-	-	-	_		2SC2785	_			2SC2785								_	2SC2785		2SA1175	DTA144ES	_	DTA144ES	RD6.8ESB2		1SS148	1SS148	RD7.5E-B3TN
0 20	22	23	24	25	56	27	28	29	30	31	32	33	34	35	36	37	38	40	41	43	44	47	49	101	D 2	ε	4	9	9

| NJM4558D | NJM4538BP | NJM45338BP | NJM2903D | NJM29003D | N

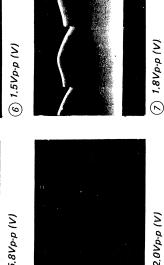
**DB BOARD** 

		The same of the sa	
INVERTER	23	2SC2785	H. CLAMP
AMP & CLAMP	24	2SK514	H. CLAMP
AMP & CLAMP	52	2SC2785	H. SW
AMP & CLAMP	56	2SC2785	AMP
AMP	27	2SC2785	H. CLAMP
1/2HV. SW	28	2SK514	H. CLAMP
BUFFER	53	2SC2785	H. SW
+12V REG.	30	2SC2785	AMP
-12V REG.	31	2SC2785	H. CLAMP
H.CONV CLAMP	32	2SK514	H. CLAMP
INVERTER	33	2SC2785	N.T.C AMP
	34	2SA1175	N.T.C AMP
H. SW	35	2SA1175	BUFFER
2XV. PULSE GEN	36	2SC2785	BUFFER
50/60 SW	37	DTC124ES	N/U SW
2XV SW	38	2SA1175	BUFFER
2XV SW	40	2SC2785	ADDER
H. SW	14	2SC2785	ADDER
AMP	43	2SC2785	H.CLAMP
H. CLAMP	44	2SA1175	BUFFER
N/U SW	47	DTA144ES	16:9 SW
CLAMP	49	DTC144ES	INVERTER
BUFFER	101	DTA144ES	N/U SW
50/60 SW			
50/60 SW	D . 5	RD6.8ESB2	LEVEL SHIFT
20/60 SW	6	18S148	PROTECTER
50/60 SW	4	1SS148	PROTECTER
50/60 SW	2	18S148	DC STOPPE
BUFFER	9	RD7.5E-B3TN	+7.5V REG.
CLAMP	7	RD7.5E-B3TN	-7.5V REG.
	80	RD6.8ESB2	LIMITTER
		0, 100	

DTC124ES 2SC2785 2SC2785

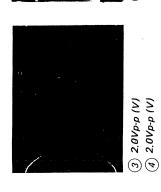
	(N) 1 8Vn-n (V)
	(5) 1 5Vp-p (V)
	(1) 5.8Vp-p (V)

(1) 4.8Vp-p (H)



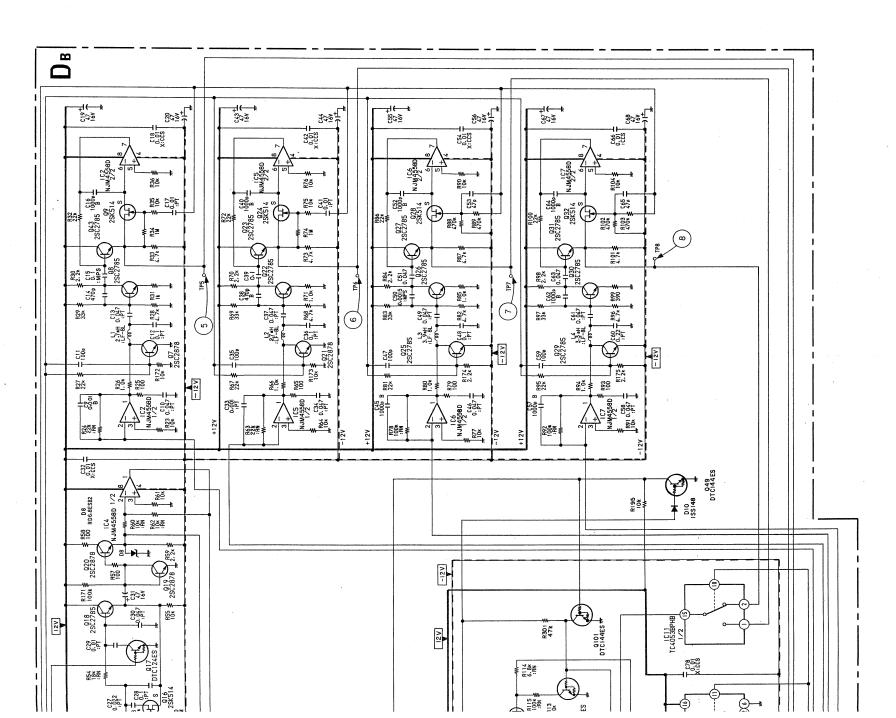
(10) 1.5Vp-p (V)

5-87



(2) 5.8Vp-p (V)

(V) q-qV1 (Q)



## DC board (CONVERGENCE CONTROL)

DC board (CONVERGENCE CONTROL)  IC 1 XRU4053BF 1/2 HV. SW 2 XRU4053BF 1/2 HV. SW 3 XRU4053BF 1/2 HV. SW Q 1 DTC144EK UND. Y BOW 2 DTC144EK UND. H. AMP 3 DTC144EK 16:9 Y BOW 4 DTC144EK 16:9 Y BOW
--

RV5 10K FIN 10K RV4 22k :RN 10k = 221 RV2 22\* :RN RV7 € 221 RV3 € 22 W RV8 € 22 **15**3 -12v V. CONV I.
V. CONV R.
V. CONV R.
H. CONV C.
H. CONV C.
H. CONV R.
H. CONV R.
H. CONV C.

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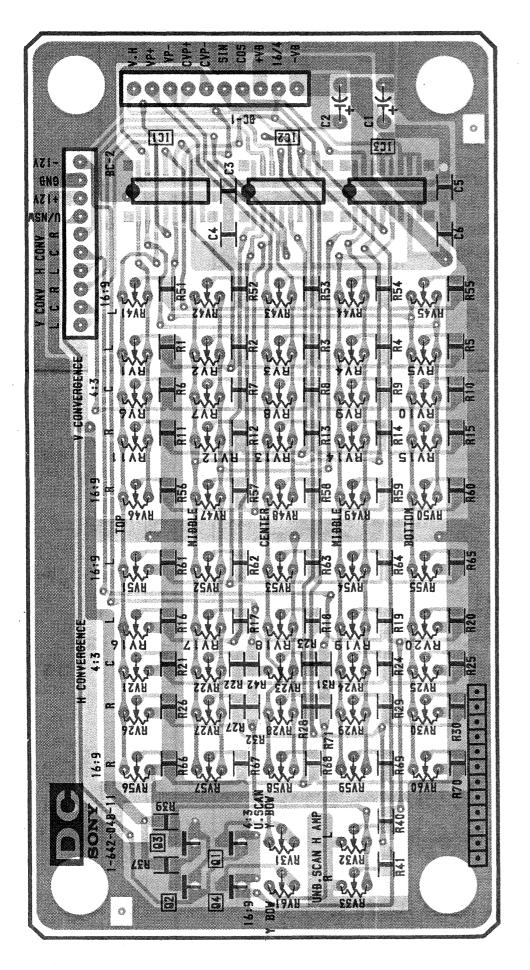
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board (CONVERGENCE CONTROL)

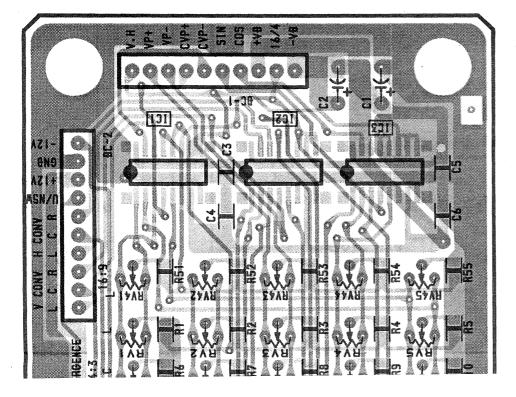
C 1 XRU4053BF 1/2 HV. SW 2 XRU4053BF 1/2 HV. SW 3 XRU4053BF

UND. Y BOW UND. H. AMP UND. H. AMP 16:9 Y BOW

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	VERT	100 1 100 1
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 Pattern of the rear side.

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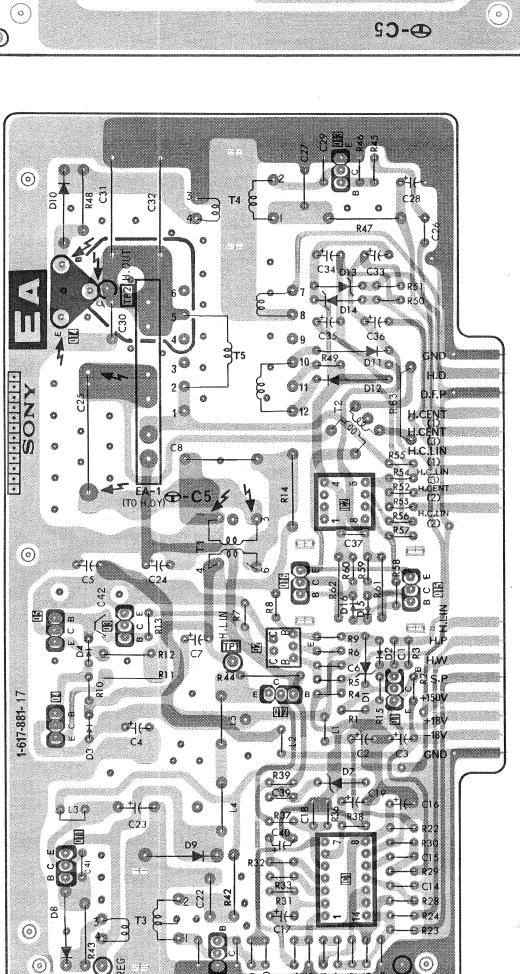
EB board (V OUT)

EA board (H OUT)

EA, EB

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<u> </u>		Ω		ΤP		
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	·	TPI	R10
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C5

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DI RI7

⊔ R2 — С23

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V.OUT (DY)

V.NF(DY)

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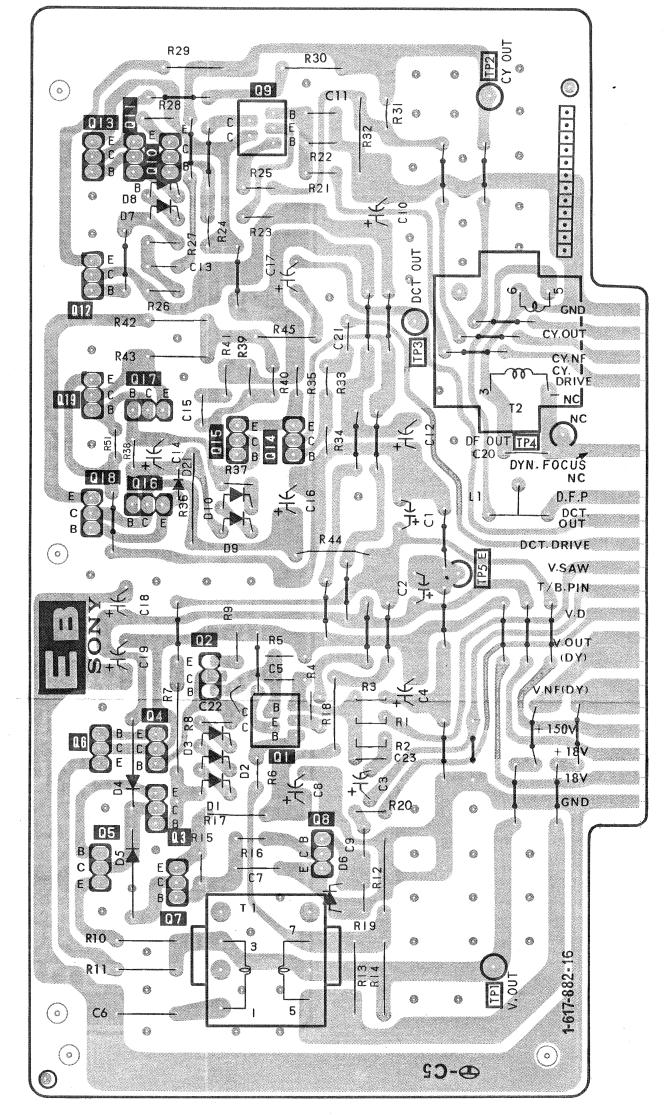
• : Pattern from the side which enables seeing.
• : Pattern of the rear side.

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14 13 **FP2** 



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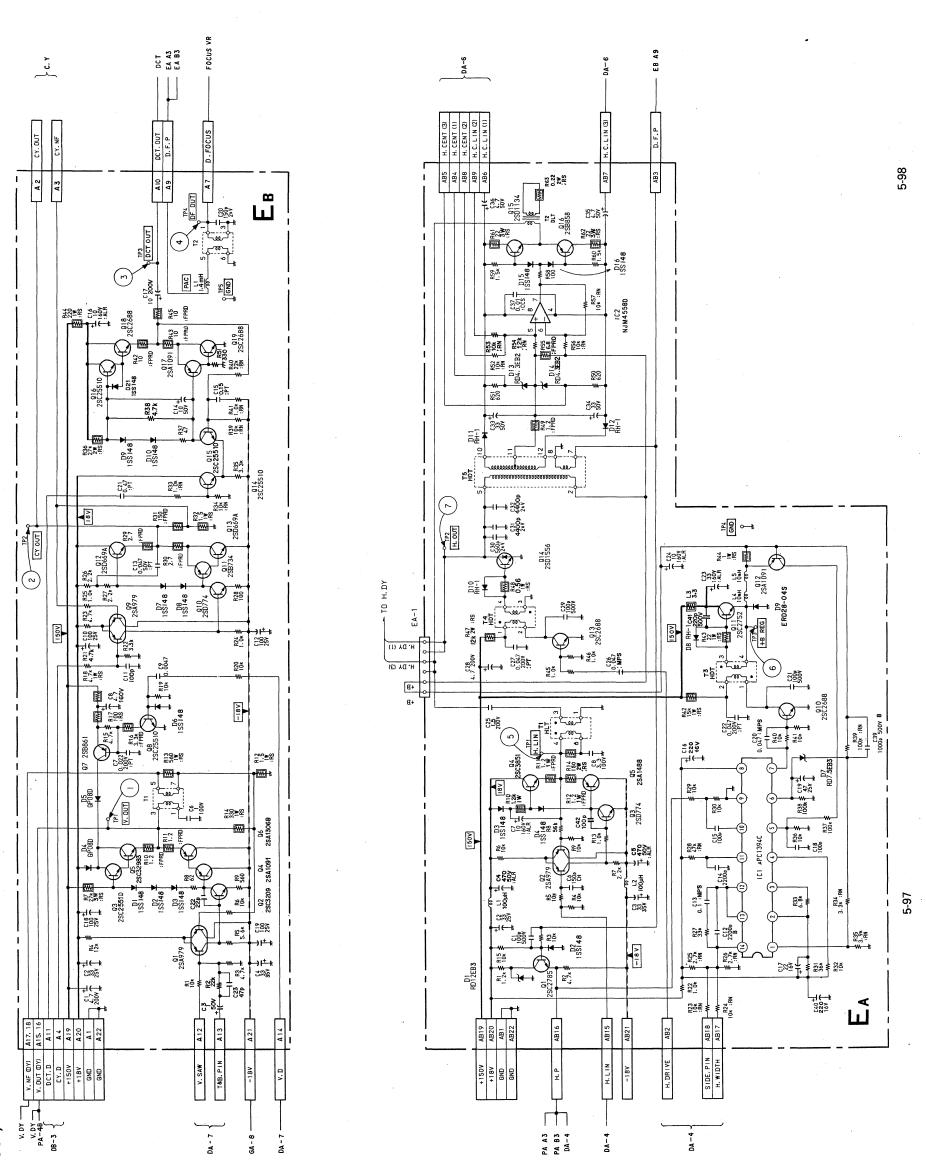
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Pattern from the side which enables seeing.
 Pattern of the rear side.

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ttern from the side which enables seeing. stern of the rear side.



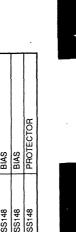


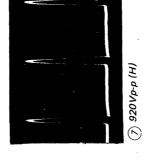
P.W.M CONTROL H.CENT

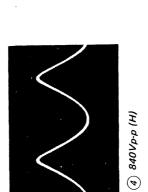
EA BOARD

EA, EB

	3	22A9/9	V.AMP	
	2	2SC3209	V.AMP	
	ဧ	2SC25510	V.AMP	
	4	2SA1091	V.AMP	
	5	2SC3298B	V.AMP OUT	
	9	2SA1306B	V.AMP OUT	
	7	2SB861	V.RETRACE SW	
	8	2SC25510	V.RETRACE SW	
	6	2SA979	CY.AMP	
	10	2SD774	CY.AMP	
	Ξ	2SB734	CY.AMP	
	12	2SD669A	CY.AMP OUT	
	13	2SD669 <b>A</b>	CY.AMP OUT	
-	14	2SC25510	D.C.T AMP	
	15	2SC25510	D.C.T AMP	
	16	2SC25510	D.C.T AMP	
	17	2SA1091	D.C.T AMP	
	18	2SC2688	D.C.T AMP OUT	
	19	2SC2688	D.C.T AMP OUT	
	D 1	15S148	BIAS	
	2	15S148	BIAS	
	3	15S148	BIAS	
	4	GP08D	DC.STOPPER	
	5	GP08D	DC.STOPPER	
	9	15S148	PROTECTOR	
	7	1SS148	BIAS	
	8		BIAS	
	6	1SS148	BIAS	













(H) q-d/021 (ð)

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(3) 100Vp-p (H)

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(2) 0.3Ap-p (V)

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CUS VR T 43

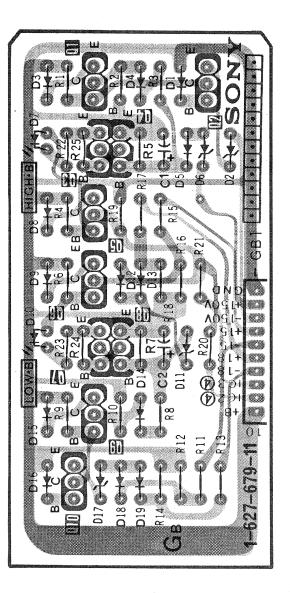
BIAS
PROTECTOR
P.W.M DRIVE
P.W.M SW
H.DRIVE
H.P.RECT.
H.P.RECT.
+4.3V REG
-4.3V REG
BIAS
BIAS

1 RD12E-B3
2 1SS148
4 1SS148
7 RD7.5E-B3
8 RH-1
9 ERD28-04S
10 RH-1
11 RH-1
11

ABS H. CENT (3)
AB4 H. CENT (2)
AB8 H. CENT (2)
AB9 H. C. L. IN (2)
AB6 H. C. L. IN (2)

(V) 9-9V0e (I)

## GB board (OVER VOLTAGE PROTECTOR)



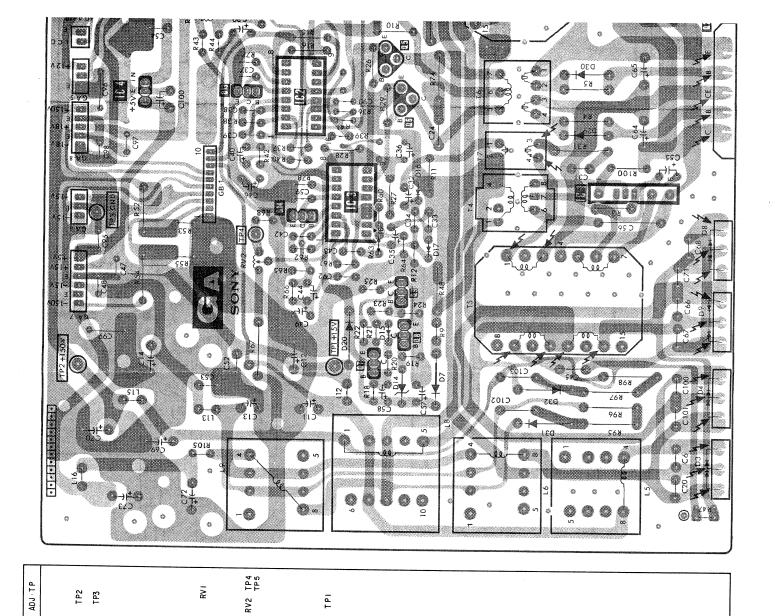
Pattern from the side which enables seeing.	Pattern of the rear side.
•••	• •

#### GA board (AC RECT, DC REG)

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5-101

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31,32

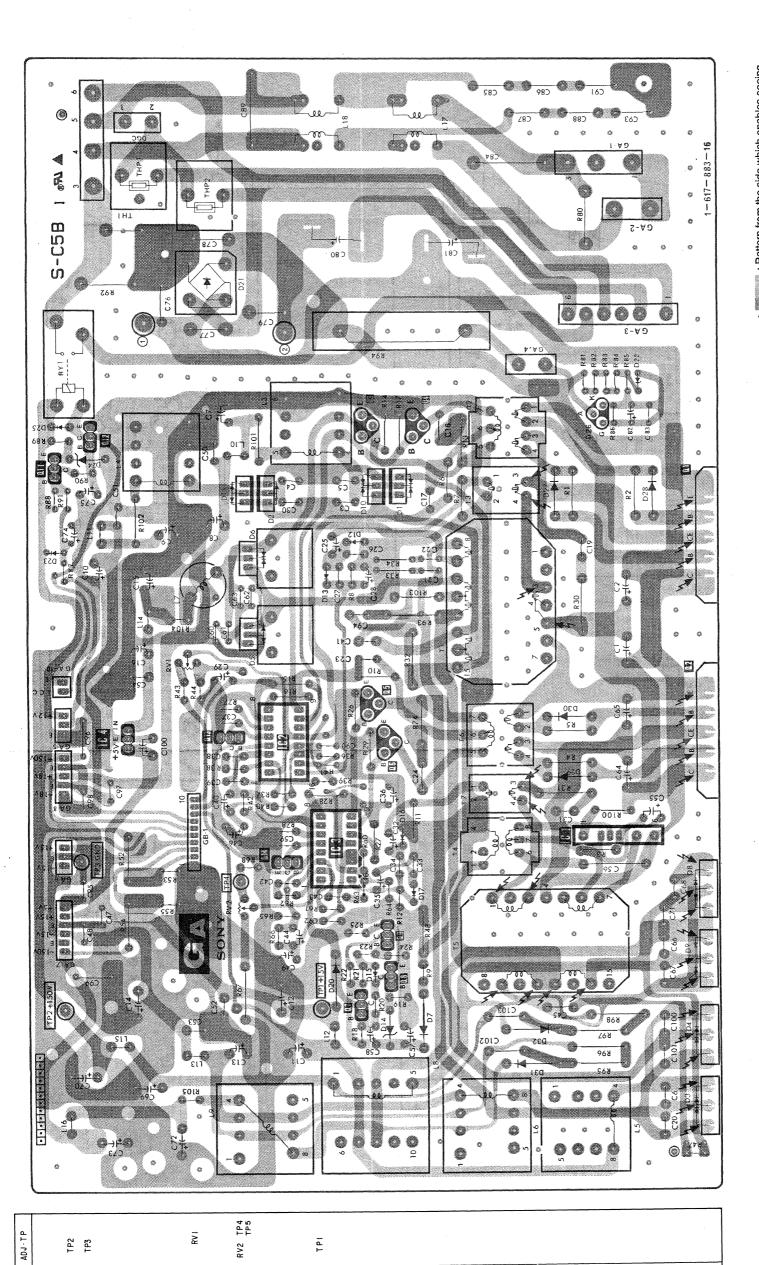
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Pattern from the side which enables seeing.
 Pattern of the rear side.

5-101

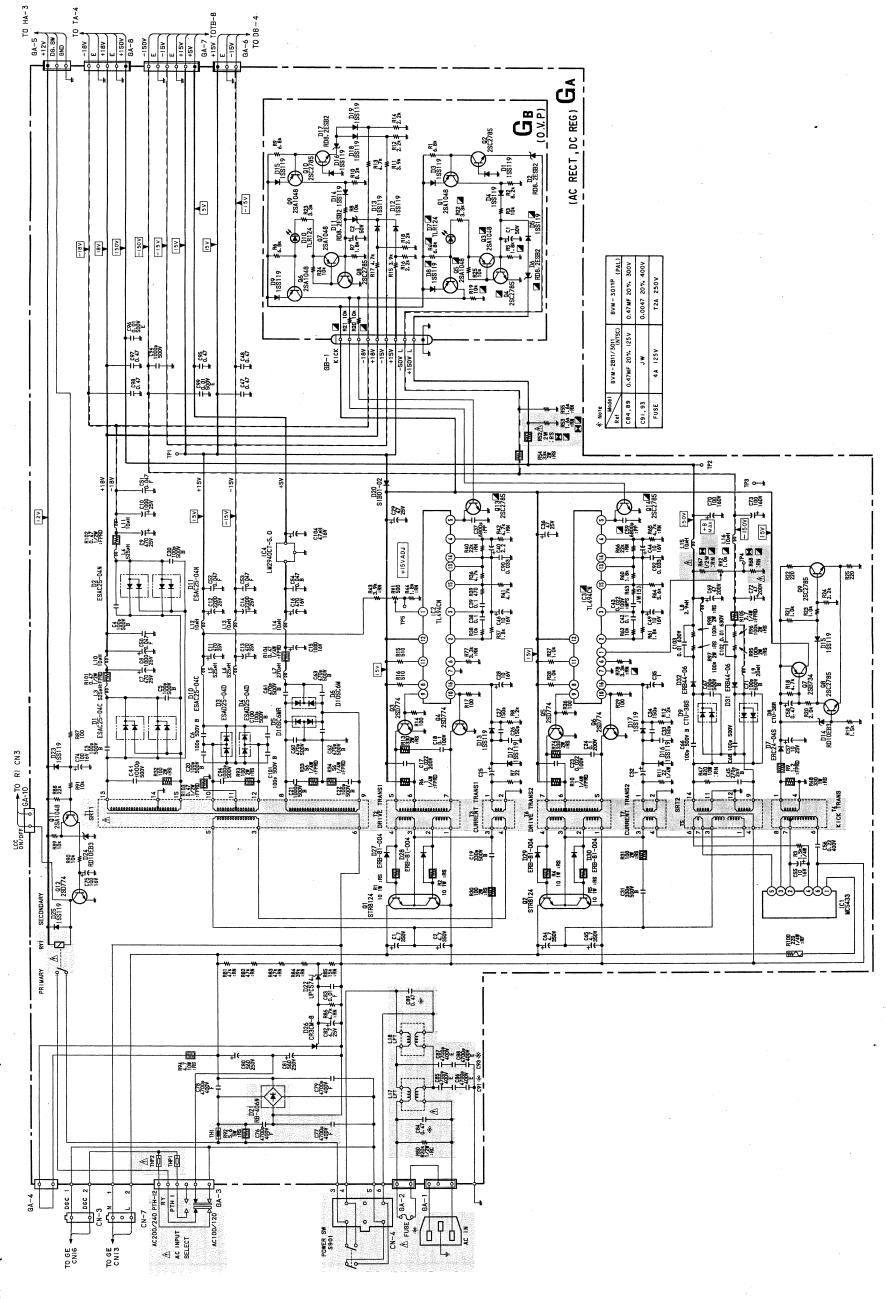
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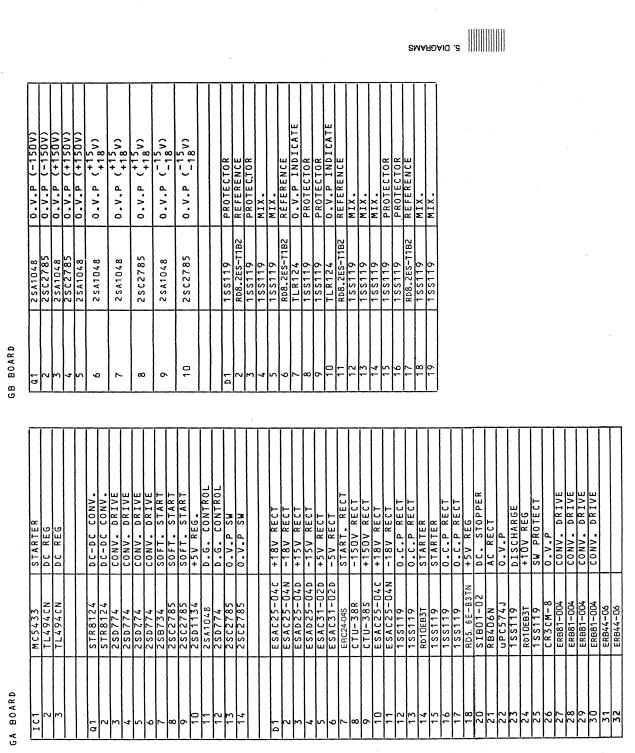
29 27 30

26



GA board (AC RECT, DC REG)
GB board (OVER VOLTAGE PROTECTOR)

5-103



(AC RECT, DC REG) GA -15V 
 Ref
 BVM—281/73011
 BVM—301P
 FAL.

 C84,89
 0.47MF 207, 125V
 0.47MF 207, 300V

 C91,93
 JW
 0.0047 207, 400V

 FUSE
 4A 125V
 T2A 250V
 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 1881 | 18 MICK 10.00 ± 6.00 ± 0 11-11-1 0.09 1 0.47 1 0.47 1 0.47 1 0.47 1 0.48 ₹¥¥¥ -0 E L CSI S1B01-02 Cal Carl 250 Figh Figh Figh Carl 250 Figh Ca - 1 | | | | \$<del>4</del>3 ₩₩ NS I -15V H401 H-34-#**₩** ⇒1<del>±</del>± \$\$\$3 104 LM2940CT-5.0 81.02 0.47 1.724 i.FPRB +15VADJ | R21 | R22 | 1.0k | R22 | 1.0 10.14 10 D2 ESAC25-04N # 5.2% 2.2% TL494CN 1000 m

11494CN

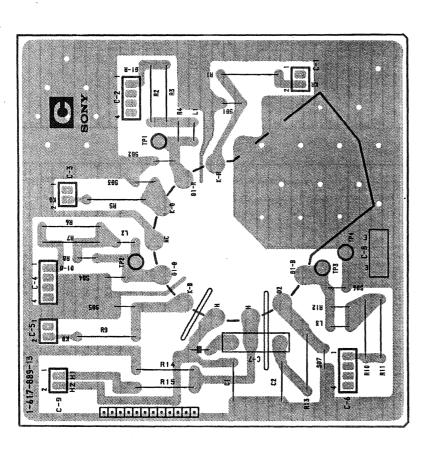
5-1

GA, GB

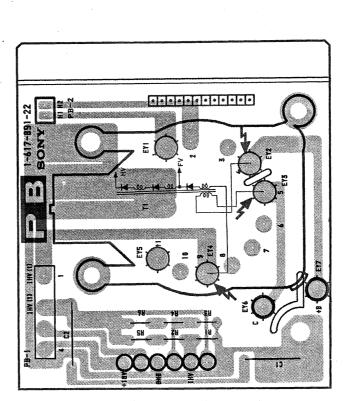
C, PA, PB

C board (CRT SOCKET)

PA board (HIGH VOLTAGE PROTECTOR)



PB board (FBT)

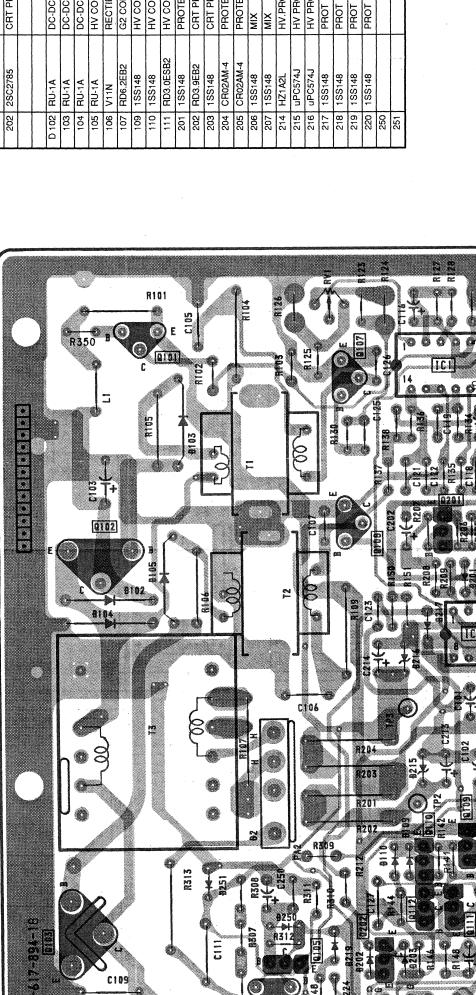


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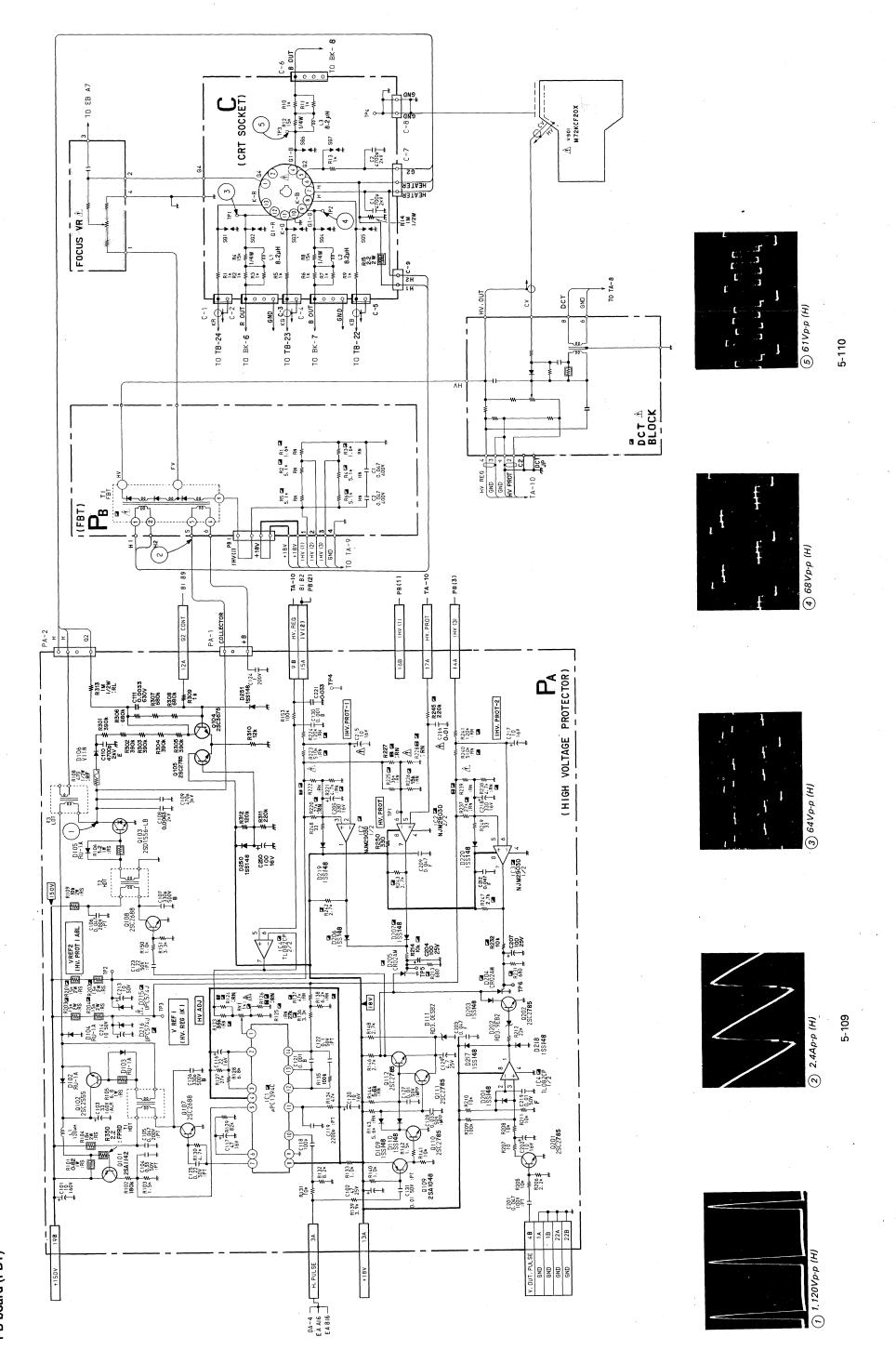
C108

COLLECTOR

#### PA BOARD

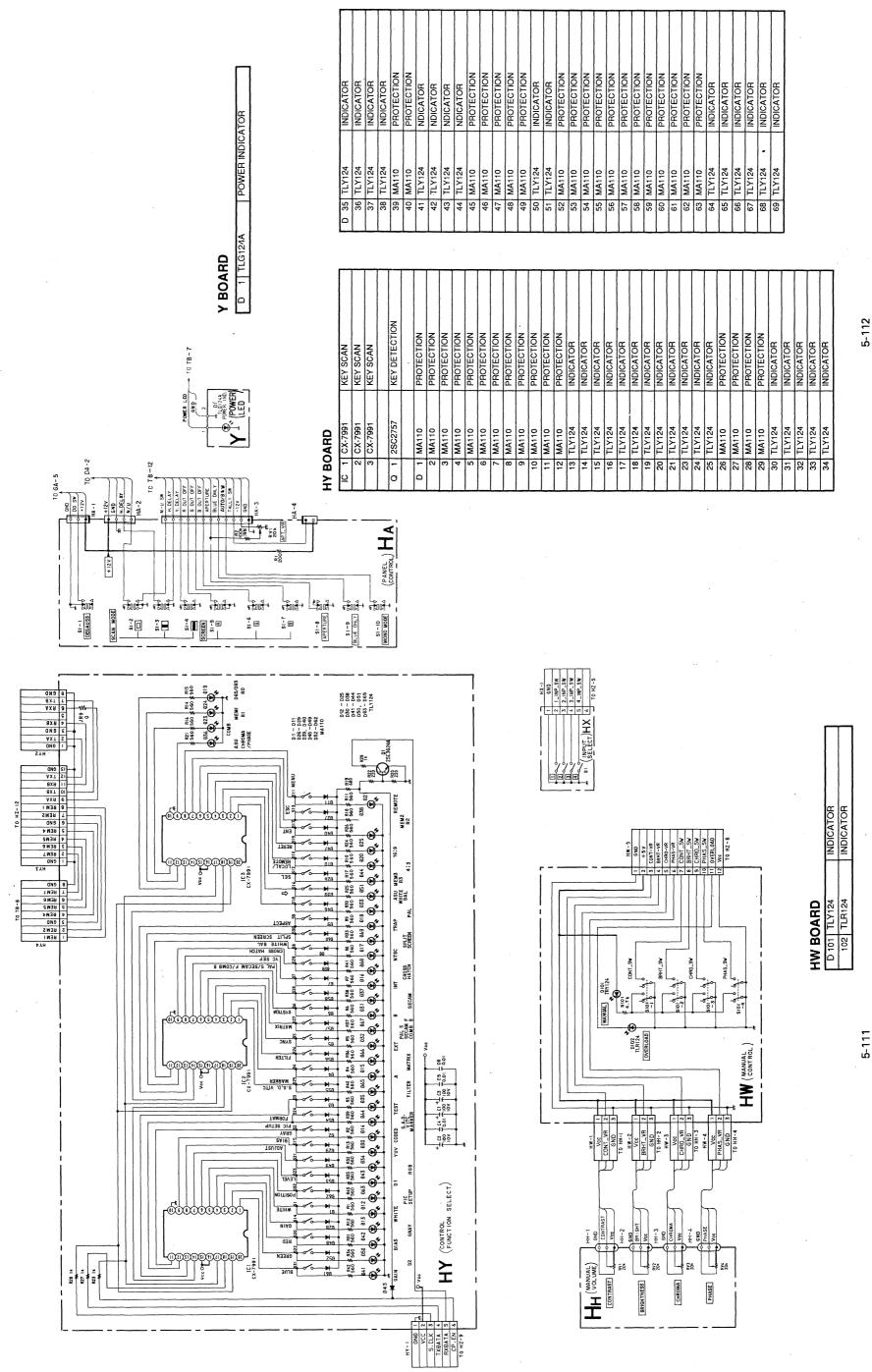
2	uPC1394C	P.W.M CONTROL
2	NJM2903D	COMPARATOR
က	NJM2903D	COMPARATOR
4	TL082CP	BUFFER & COMPARATOR
0101	2SA1142	O.V.P
102	2SC2555	DC-DC CONV.
103	2SD1556	HV CONV.
104	2SC3675	G2 REGULATOR
105	2SC2785	G2 REGULATOR
107	2SC2688	DC-DC CONV. DRIVE
108	2SC2688	HV CONV. DRIVE
109	2SA1048	HV CONV. DRIVE
110	2SC2785	HV CONV. DRIVE
111	2SC2785	HV CONV. DRIVE
112	2SC2785	HV CONV. DRIVE
201	2SC2785	CRT PROTECTOR
202	2SC2785	CRT PROTECTOR
D 102	RU-1A	DC-DC CONV.
103	RU-1A	DC-DC CONV.
104	RU-1A	DC-DC CONV.
105	RU-1A	HV CONV. DRIVE
106	V11N	RECTIFIER
107	RD6.2EB2	G2 CONTROL
109	13S148	HV CONV. DRIVE
110	13S148	HV CONV. DRIVE
111	RD3.0ESB2	HV CONV. DRIVE
201	1SS148	PROTECTOR
202	RD3.9EB2	CRT PROTECTOR
203	1SS148	CRT PROTECTOR
204	CR02AM-4	PROTECTOR
202	CR02AM-4	PROTECTOR
206	1SS148	MIX
207	18S148	MIX
214	HZ1A2L	HV.PROT
215	uPC574J	HV PROT. REF.
216	uPC574J	HV PROT. REF.
217	1SS148	PROT
218	1SS148	PROT
219	1SS148	PROT
220	1SS148	PROT
250		
251		

Pattern from the side which enables seeing.
 Pattern of the rear side.

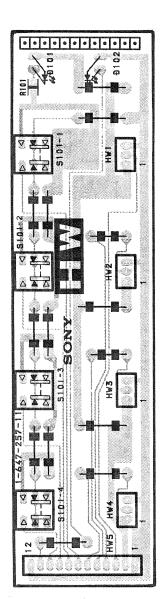


### HA, HH, HW, HX, HY, Y HA, HH, HW, HX, HY, Y

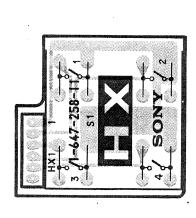
HA board (PANEL CONTROL), HH board (MANUAL VOLUME), HW board (MANUAL CONTROL), HX board (INPUT SELECT), HY board (CONTROL FUNCTION SELECT), Y board (POWER LED)



HW board (MANUAL CONTROL)



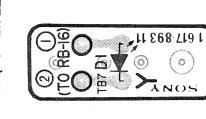
HX board (INPUT SELECT)

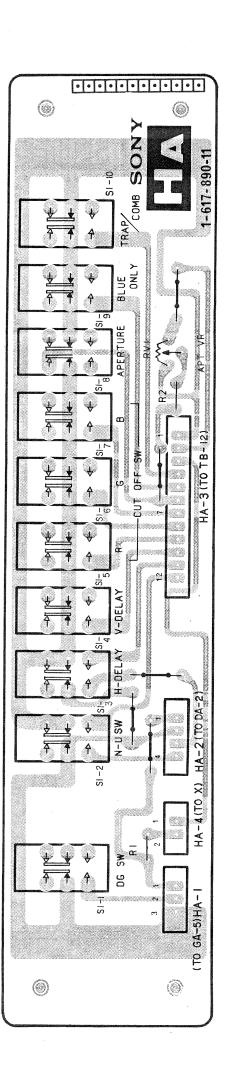


HH board (MANUAL VOLUME)



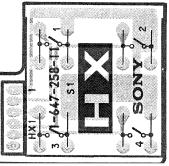
Y board (POWER LED)





HA board (PANEL CONTROL)

# IX board (INPUT SELECT)



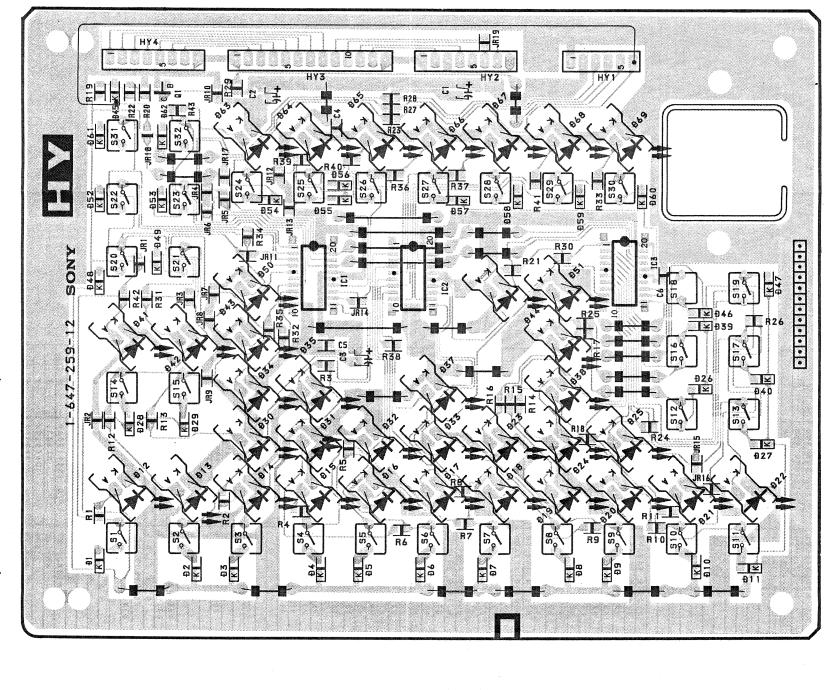
Y board (POWER LED)



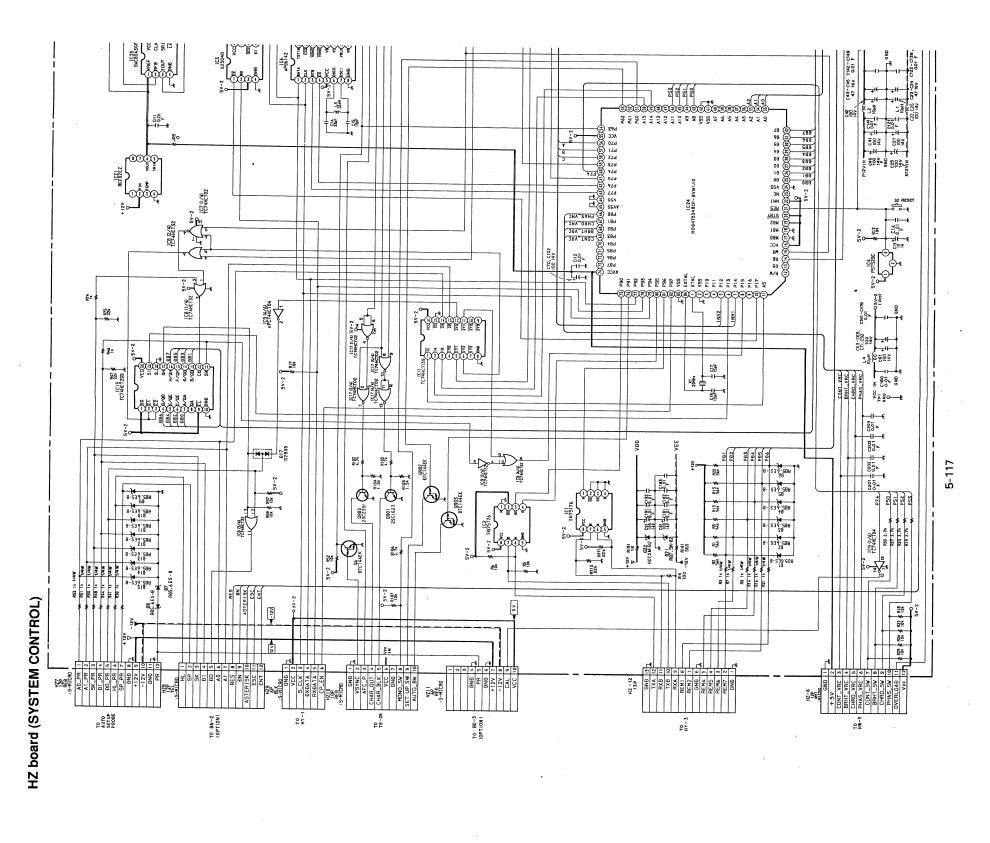
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1-617-890-11

HY board (CONTROL FUNCTION SELECT)



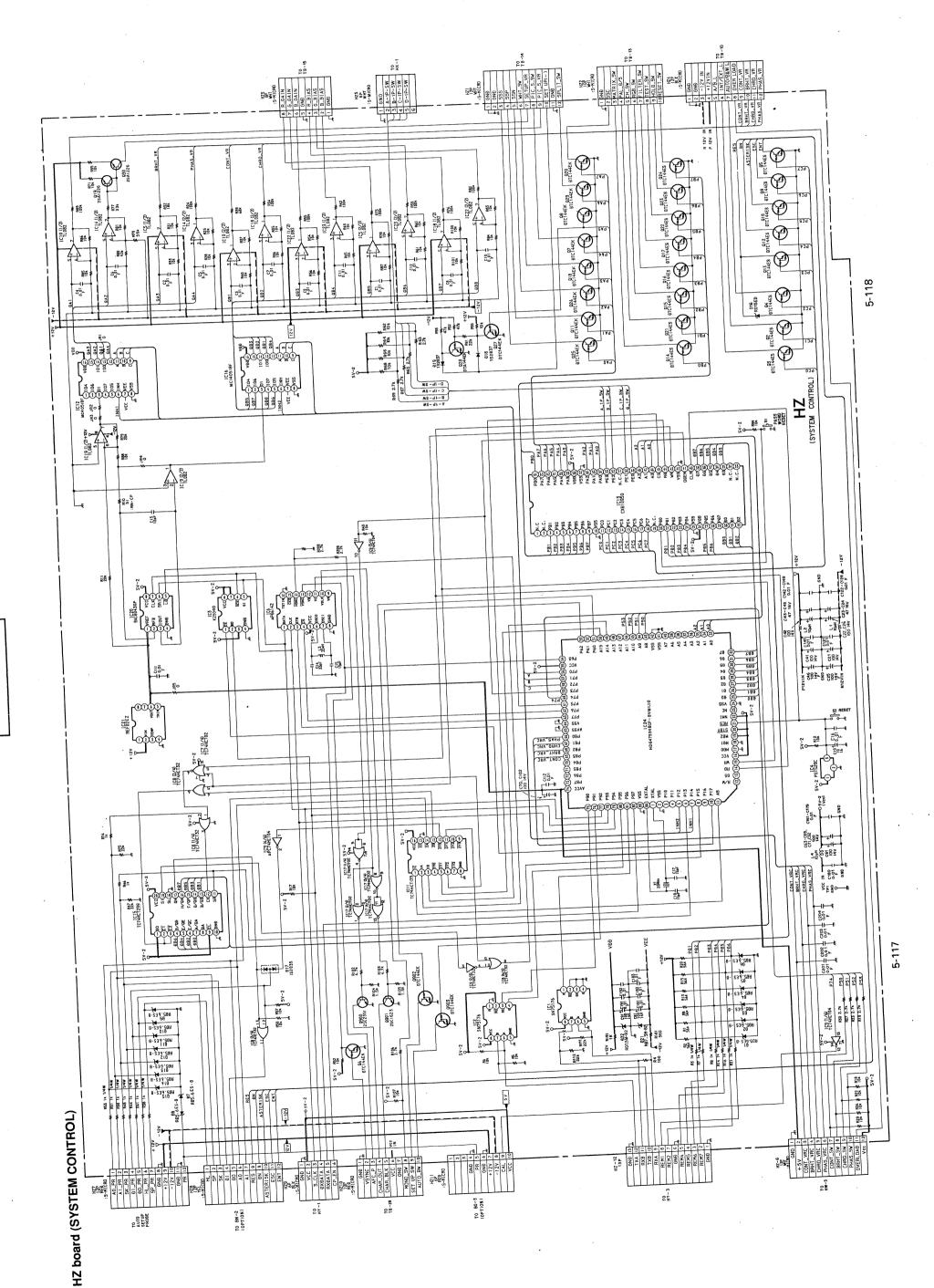
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HZ BOARD



- COMPONENT SIDE -

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HZ board (S - CONDUC1	

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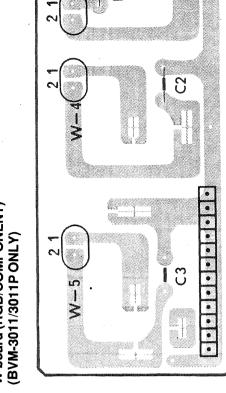
22202000000000 000000000 000000000 Ê 99 चिंद्री 017H ZO

- COMPONENT SIDE

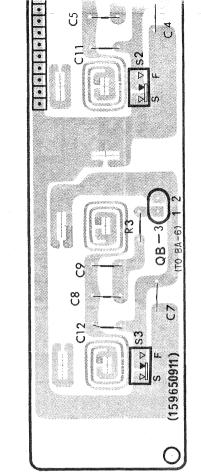
5-120

: Pattern from the side which enables seeing.

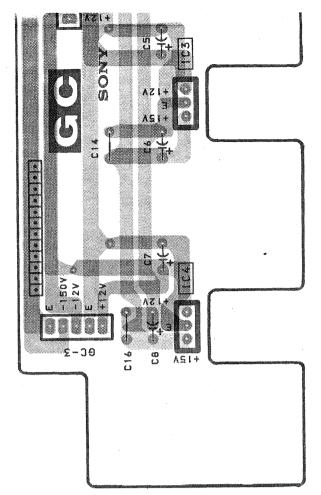
W board (RGB/COMPONENT) (BVM-3011/3011P ONLY)



QB board (RGB/COMPONENT INPUT)



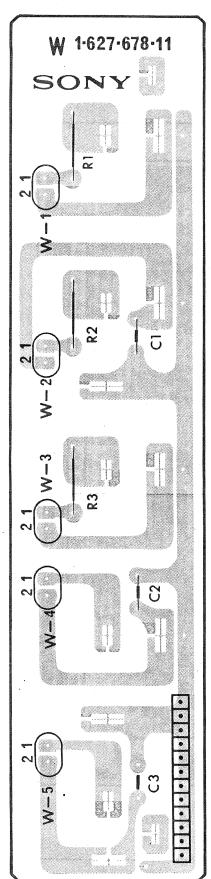
GC board (REG)



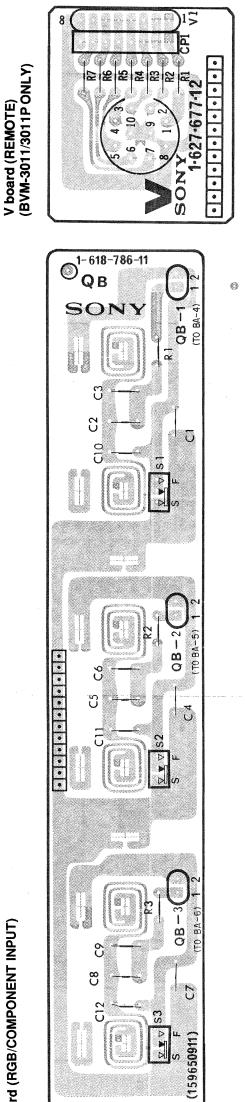
(1-A8 OT) S-T (S-A8 OT) E-AB OT) 0 01-617-895-11 QA SONY 22 012 90 60 82 CS

QA board (COMPOSITE VIDEO INPUT)

W board (RGB/COMPONENT) (BVM-3011/3011P ONLY)

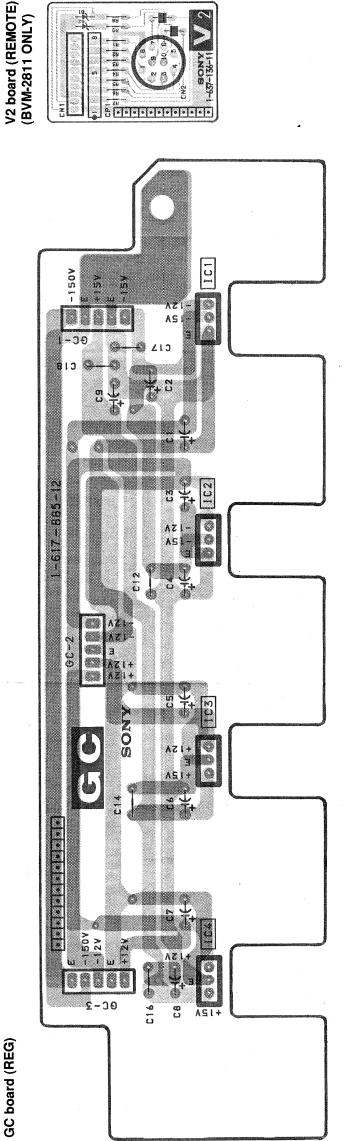


QB board (RGB/COMPONENT INPUT)



GC board (REG)

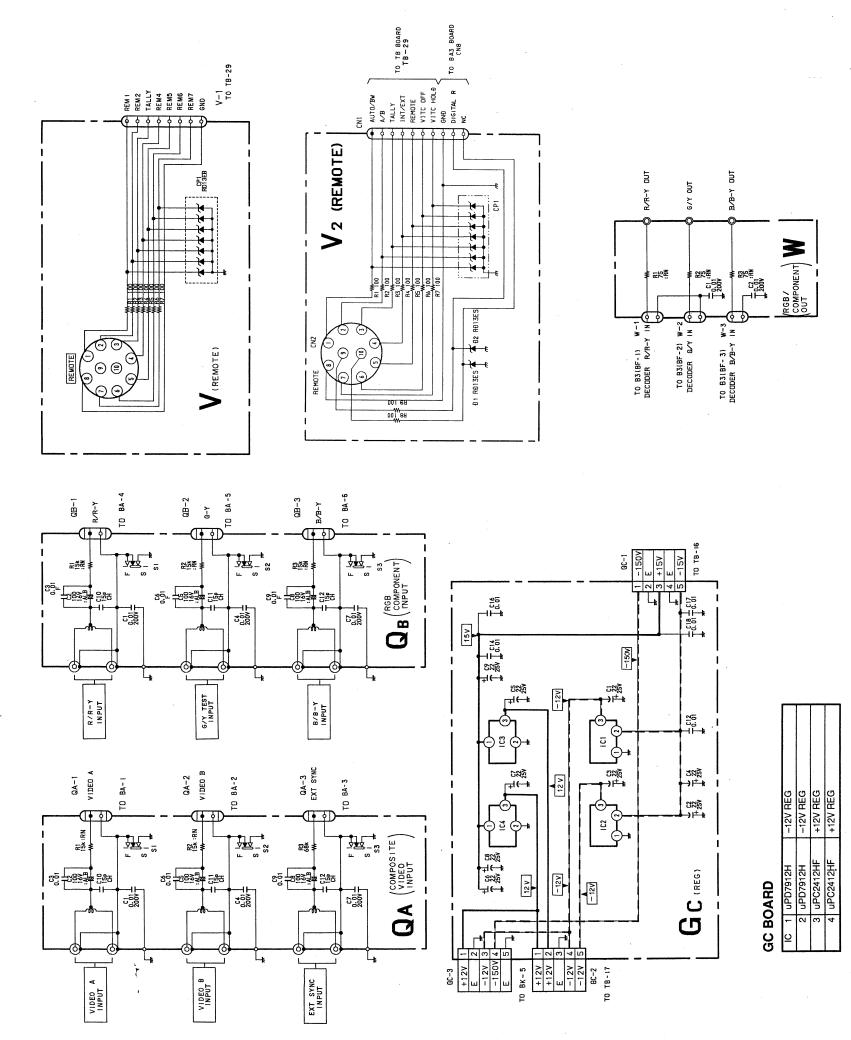
S—7 (TO BA-3)



: Pattern from the side which enables seeing. • Earlier of the rear side.

5-123

GC board (REG), QA board (COMPOSITE VIDEO INPUT), QB board (RGB/COMPONENT INPUT) V board (REMOTE) (BVM-3011/3011P ONLY), V2 board (REMOTE) (BVM-2811 ONLY), W board (RGB/COMPONENT) (BVM-3011/3011P ONLY)

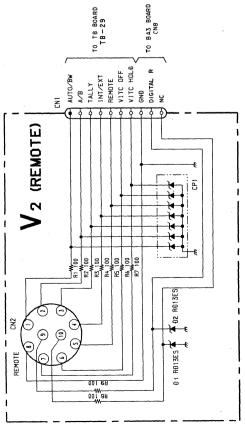


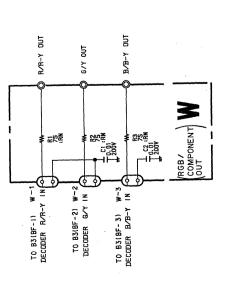
GC, QA, QB, V, V2, W

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REM S
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REM 6
REM 7
REM 7
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TO TB-29

V(REMOTE)

REMOTE CO.





R2 board (LANDING CONTROL)

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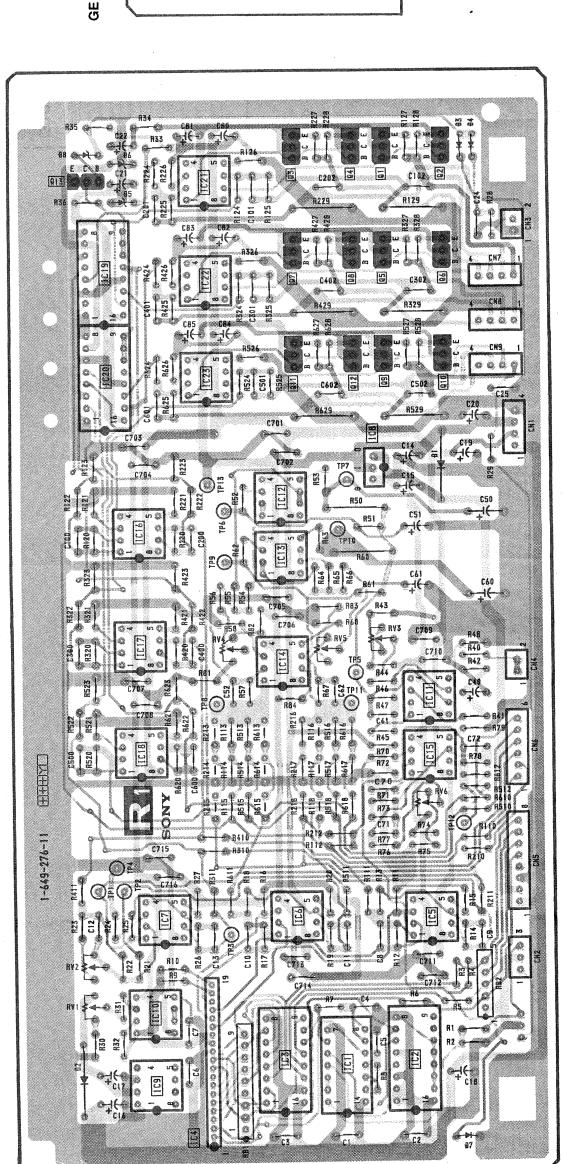
GE, R1, R2

R1 board (LANDING CORRECTION)

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board (LANDING CORRECTION)	e 4 & - 5		7	
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	<u>8</u> <u>7</u>			
	14			TP8 RV4 TP1 RV5
	16 13 12 8			TP9 TP6 TP13 TP10 TP1
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GE board (RELAY)



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C1000

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RT CB CT LB LT

RV110

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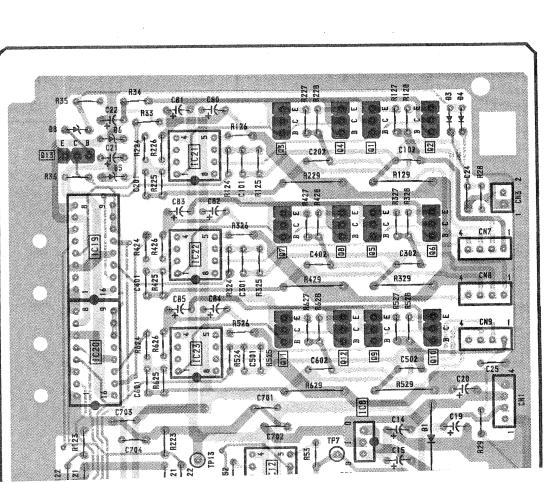
ANOS

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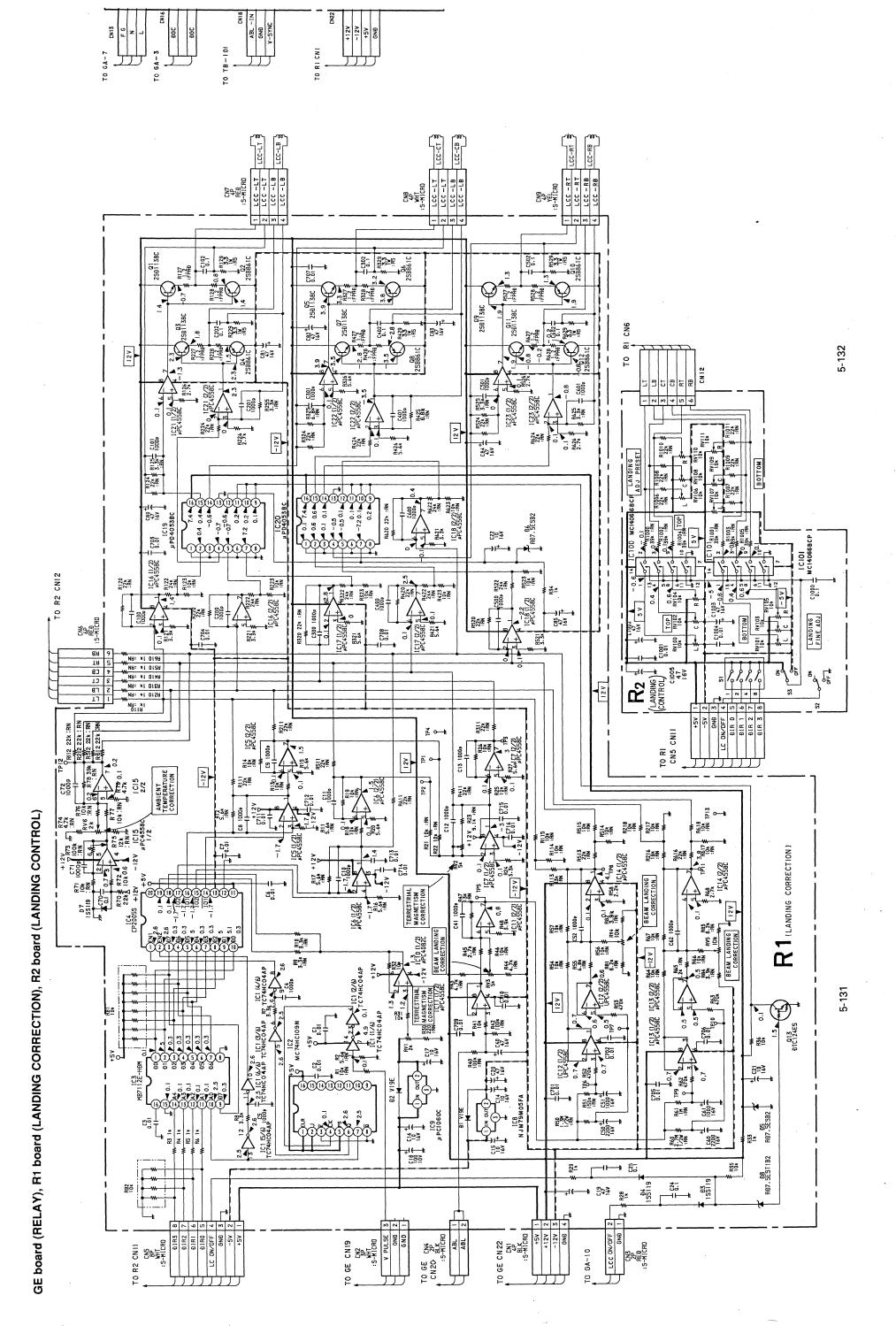
器,置产产 0000 CHIS

SuB-L

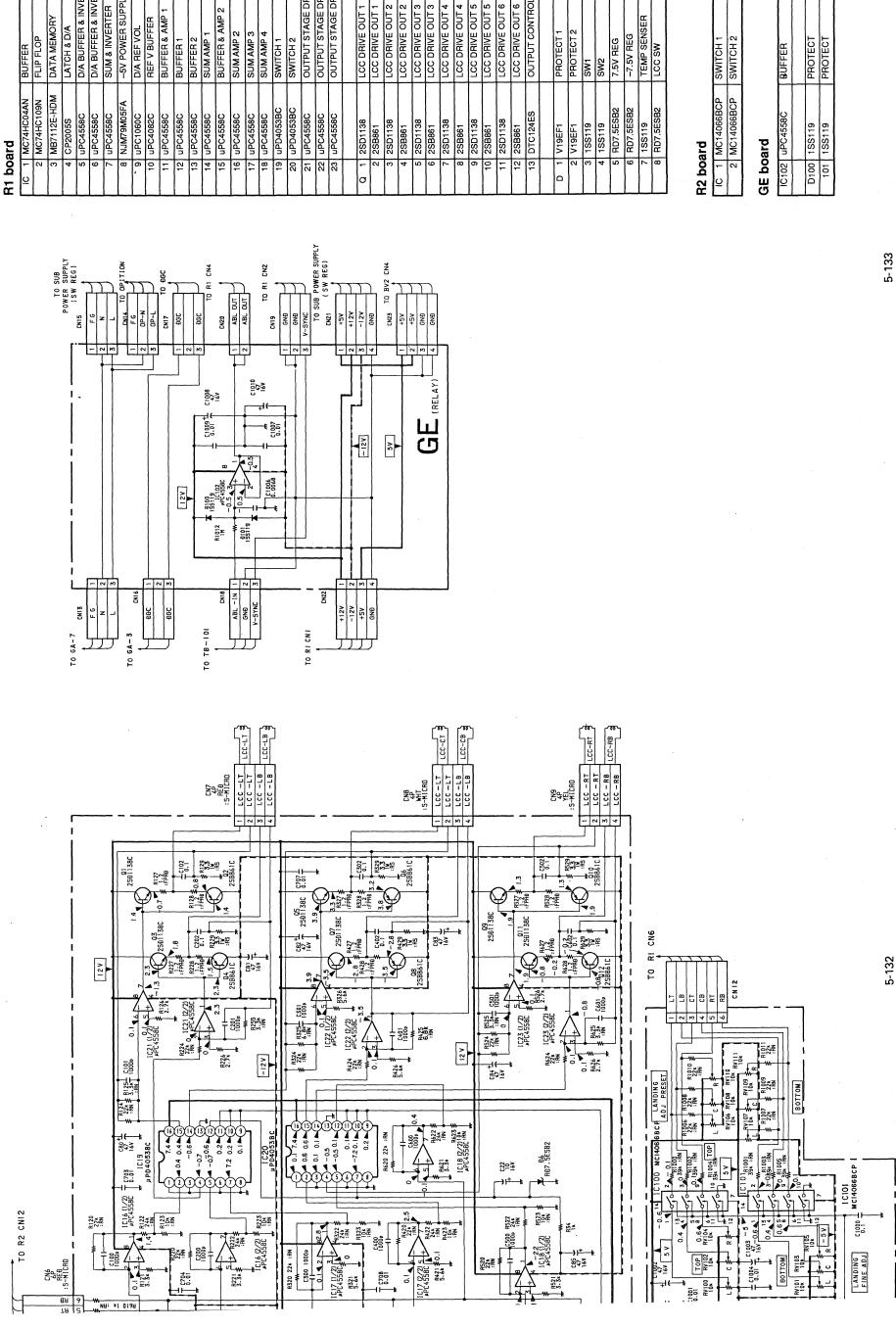
GE board (RELAY)



: Pattern from the side which enables seeing.
: Pattern of the rear side.



GE, R1, R2



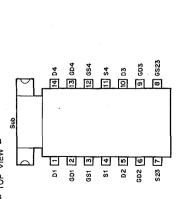
00

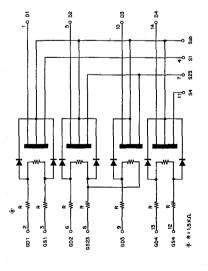
Z board (EXTESION BOARD)

Pattern from the side which enables seeing.
 Pattern of the rear side.

# 5-4. SEMICONDUCTORS







CX158 (SONY)
HORIZONTAL DEFLECTION OSCILLATOR/FREQUENCY LIMITER
TO VIEW —
HOSC

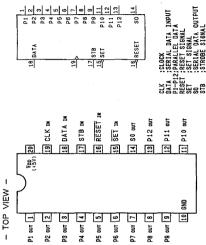
D.P.; DISCHARGE PROTECTION	H.F ADJ; HORIZONTAL FREQUENCY ADJ	HORIZONTAL SYNC IN	S.W IN , SAW WAVE IN T.C 1/2 , TIME CONSTANT 1/2				
H.OSC T.C2 T.C1 ADJ (14) [13] [12] [14] [10] [9] [8]	(Yec)	HORIZONTAL		AFC FREGUENCY	NC NC +	H.S AFC S.W F.L D.P	

CX23025 (FUJI ELECT) CMOS SYNC SIGNAL DISCRIMINATOR - TOP VIEW -

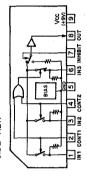
			П		
	Bout	-	0		
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				<b>-</b>	
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Ļ	(+4710+157)	~			
Ļ	H 1N 4 (+4V 10 + 15V)	A out 2 7 V II	Į	B our [3] [6] SLC	Vss

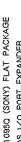
≅õ	SYMBOL	FUNCTION
Ŀ	NE.	HORIZONTAL SYNC SIGNAL INPUT
7	Aout	OUTPUT FOR DISCRIMINATING SYNC SIGNAL SPECIFICATION
m	Bour	OUTPUT FOR DISCRIMINATING SYNC SIGNAL SPECIFICATION
4	SSA	GND
2	Viv	VERTICAL SYNC SIGNAL INPUT
9	SLCT	POWER ON INITIALIZE SELECT INPUT
7	N.	VERTICAL SYNC SIGNAL INPUT
80	οοΛ	POWER SUPPLY

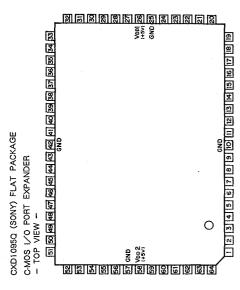
CX7991 (SONY)
CMOS 12-BIT SERIAL TO PARALLEL CONVERTER
- TOP VIEW -



CX894 (SONY)
3 INPUT SWITCH
- SIDE VIEW -



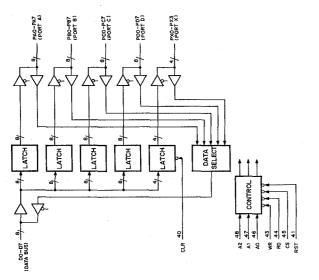




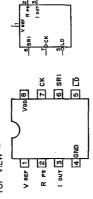
SYMBOL	PXO	PXI	ž	PX2	PX3	PAO	PA1	PA2	GND	Vop (+5v)	PA3	PA4	PAS	PA6	PA7	980
OUT	0	0		0	0	0	0	0			0	0	0	0	0	0
Z	0	0		0	0	0	0	0		0	0	0	0	0	0	o
ΝŠ	49	90	50	22	53	4	22	99	25	28	29	9	9	62	8	64
SYMBOL	NC	NC	23	2	92	90	20	CLR	RST	GND	WR	RD	S	ΦO	Ā	AZ
당			0	0	0	0	0									
2			0	0	0	0	0	0	0		0	0	0	0	0	0
g Si	33	34	33	38	37	38	39	40	41	45	43	44	45	46	47	48
SYMBOL	PC6	PC7	NC	PDO	PD1	P02	P03	P04	GND	VDD (+5V)	PDS	PD6	PD7	00	01	02
	0	0		0	0	0	0	0		Г	0	0	0	0	0	С
ž	0	0		0	0	0	0	0		o	0	0	0	0	0	С
₽Š.	21	18	61	8	12	22	23	54	52	56	22	58	29	30	ñ	32
SYMBOL NO.	NC	NC	PB 1	PB2	PB3	PB4	PB5	PB6	789	GND	PCO	PC)	PC2	PC3	PC4	S
Ą			0	0	0	o	0	0	0		0	0	0	0	0	c
Z			0	0	0	0	0	0	0		0	0	0	0	0	С
Z O	-	2	3	4	2	9	2	8	6	2	Ξ	12	13	4	5	9

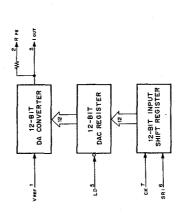
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ř	48	}
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MODE	PORT A DATA BUS	PORTB - DATA BUS	PORT C → DATA BUS	PORT D-DATA BUS	PORT X- DATA BUS				DATA BUS PORT A	DATA BUS-PORT B	DATA BUS -PORT C	DATA BUS-PORT D	DATA BUS PORT X		DATA BUS +CTL REG.1	DATA BUS +CTL REG.2	DATA BUS; HI-Z					
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¥	0	0	-		0	0	-	-	0	0	-	-	0	0	-	-	×		_1		w	Ř
AZ	0	0	0	0		-	-	-	0	0	٥	٥		-	-	-	×	1	o; LOW LEVEL	HIGH LEVEL	DON'T CARE	HIGH IMPEDANCE
W.	-	-	-	-	-	-	-	-	0	0	0	0	0	0	o	0	×	1	<b>≯</b>	픘	ř	- E
RD WR	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	×		3	Ĭ	2 ::	Ī
શ	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	]	U	-	×	H-2.1
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[ 8		PA2		PA4			<del></del>	-		2 2		88	<u> </u>	84	8			ű	20			

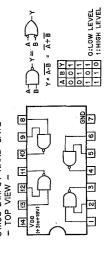


DAC-8043GP (PMI) C-MOS 12-BIT SERIAL INPUT D/A CONVERTER - TOP VIEW -

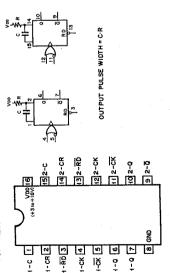




HD14011BP (HITACHI)
MC14011BCP (MOTOROLA)
TC4011BP (TOSHIBA)
UPD4011BC (NEC)
CMOS 2:NPU NAND GATE
TOP VIEW —



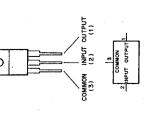




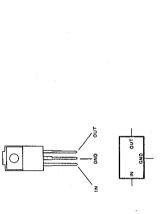
NON - RETRIGGERABLE M.M.V RETRIGGERABLE M.M.V ià o t

LM7812CT (NSC) +12V NJM7812FA (JRC) +12V POSITIVE VOLTAGE REGULATOR (500mA) - FRONT VIEW -INPUT COMMON ( ٥ ۵

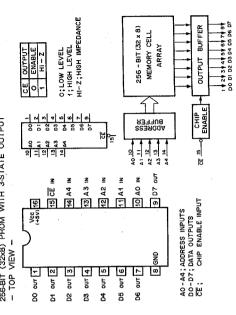
LM7912CT (NS) -12V NJM79M05FA (JRC) - 5V NEGATIVE VOLTAGE REGULATOR (500mA) - FRONT VIEW -



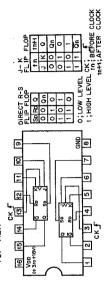
M5F78M12L (MITSUBISHI) +12V POSITIVE VOLTAGE REGULATOR (500mA) - PRINTED SIDE VIEW -



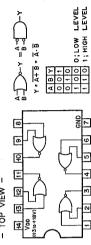
256-BIT (32x8) PROM WITH 3-STATE OUTPUT - TOP VIEW -MB7112E (FUJITSU)



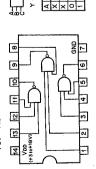
MB84027B (FUJITSU) TC504027BP (TOSHIBA) CMOS JK MASTER SLAVE FLIP-FLOP WITH DIRECT SET∕RESET — TOP VIEW —

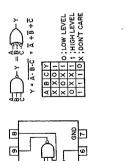


C-MOS 2-INPUT NOR GATE - TOP VIEW -MC14001BCP (MOTOROLA) UPD4001BC (NEC)

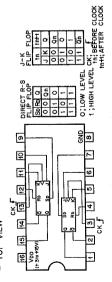


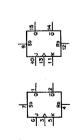






MC14027BCP (MOTOROLA) CMOS JK MASTER SLAVE FLIP-FLOP WITH DIRECT SET/RESET - TOP VIEW -

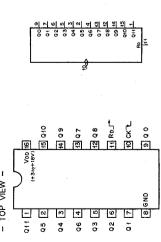


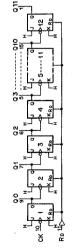


MC14040BCP (MOTOROLA) TC4040BP (TOSHIBA)

SMARGAID 5. DIAGRAMS

CAMOS L'SCAGGE RIPPLE CARRY BINARY COUNTER/DRIVER - TOP VIEW -





10	ALL LOW	COUNT			# LEVEL	
RD Q	4	0			0; LOW	HIGH
8	0	-	0	-		-
5	0	0	1	-		
02	٥	0	0	0		-
10	0	0	0	0		
9	0	0	0	0		-
05 04 03 02	0	0	0	0		-
96	0	0	0	0		-
4	0	٥	0	٥		-
80	0	0	0	0		-
99 69	0	0	0	0		-
용	0	0	0	0		-
011	0	0	0	0		-
COUNT	0	-	N	ю		4095

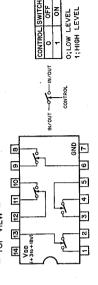
tal T

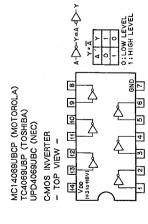
MC14051BF (MOTOROLA) FLAT PACKAGE CMOS 8-CHANNEL ANALOG MULTIPLEXER/DEMULTIPLEXER — TOP VIEW —

MC14053BCP (MOTOROLA) TC4053BP (TOSHIBA) TC4053BPHB (TOSHIBA) UPD4053BC (NEC) XRU4053BF (EXA) FLAT PACKAGE

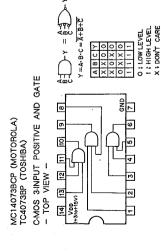


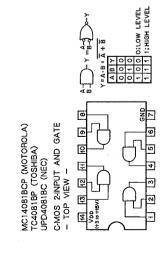
MC14066BCP (MOTOROLA)
UPD4066BC (NEC)
C-MOS QUAD BILATERAL ANALOG SWITCH
- TOP VIEW -



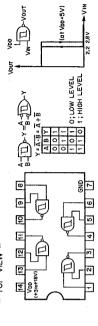


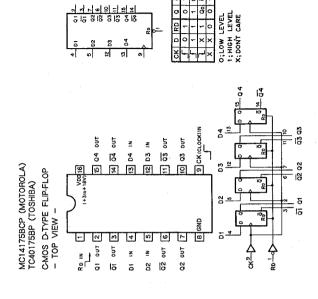
A B Y 0 0 0 0 1 1 1 0 1 0: LOW LEVEL 1 1 1 1 1: HIGH LEVEL MC14071BCP (MOTOROLA)
TC4071BF (TOSHIBA) FLAT PACKAGE
TC4071BP (TOSHIBA)
UPD4071BC (NEC)
CMOS 2:INPUT OR GATE
T OP VIEW --H 10 9 B 13



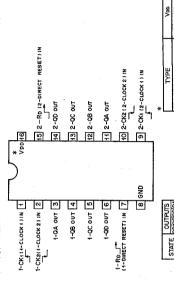


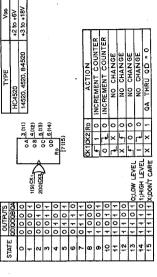
MC14093BCP (MOTOROLA) TC4093BP (TOSHIBA) C-MOS 2-INPUT NAND SCHMITT TRIGGER - TOP VIEW -

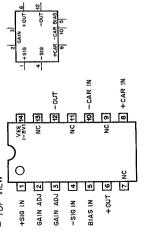




MC14520BCP (MOTOROLA)
TC4520BP (TOSHIBA)
TC4520BPHB (TOSHIBA)
C-MOS DUAL 4-BIT BINARY UP COUNTER
- TOP VIEW -

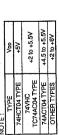






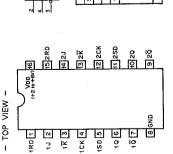
MC74HC04AN (MOTOROLA) SN74HC04AN (TI) TC74HC04AP (TOSHIBA) TC74HC104AF (TOSHIBA) FLAT PACKAGE CMOS HEX INVERTERS - TOP VIEW -

$A - \bigvee_{Y = \overline{A}} A - A$	AY 101 0; LOW LEVEL 1; HIGH LEVEL	
8 6 6 9 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		NOTE:



SMARDAID .3 [[[[[[[[]]]]]]]

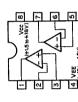
MC74HC109N (MOTOROLA)
TC74HC109P (TOSHIBA)
C-MOS J-K FLIP-FLOP WITH DIRECT SET/RESET
TOP VIEW —



25 55 55 55 55 55 55 55 55 55 55 55 55 5	
2 7 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	

0 0	SUTS	5	0	-	*_	5	-	0	ā	5	EVEL	2
3 X X D	OUTPU	1+10	1	٥	* 1	ő	o	-	15	ē	3	=
# 2 p		ļΥ	×	×	×	-	0	-	0	×	MOT S	3
	က္	5	×	×	×	0	0	-	ŀ	X	٥	٠
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о ю 8 —	ž	8	1	0	0		-	_		ı		
74-8		Sp	0	-	0		-	-		1		
24 E	_					_						

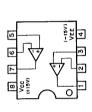
NJW082M (JRC) FLAT PACKAGE TL082ACP (TI) TL082CPS (TI) FLAT PACKAGE UPC4082C (NEC) OPERATIONAL AMPLIFIER (JFT INPUT) - TOP VIEW -



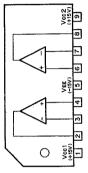
NJM2903D (JRC) DUAL VOLTAGE COMPARATORS - TOP VIEW -



DUAL OPERATIONAL AMPLIFIER - TOP VIEW -NJM4558D (JRC) UPC4558C (NEC)



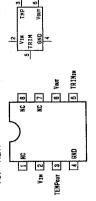
HIGH PERFORMANCE DUAL OPERATIONAL AMPLIFIER - SIDE VIEW -NJM4558S (JRC)



PST529C (MITSUMI) Vs = 4.5V VOLTAGE DETECTOR,SYSTEM RESET

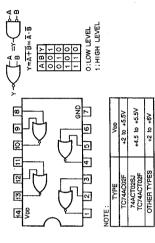
(MITSUMI)

REF-02EZ (PMI)
REFERENCE/TEMPERATURE TRANSDUCER
- TOP VIEW -



V.M. :INDUT YOLTABE (+7Vto+40V)
TEMPOUT :TEMPERATURE TRANSDUCER
YOLTABE DUDINICA. IMV/°C)
TRIMM. :QUIPUT VOLTARA.
VOUT

TC74HCT02AF (TOSHIBA) FLAT PACKAGE CMOS QUAD 2-INPUT NOR GATES - TOP VIEW -



8 7 8 8 8 8 8 8 UPC1060C (NEC) VOLTAGE REFERENCE - TOP VIEW -NC SN IN 1 (+4.50 to 1 (+2.50) 2 (+2.50) 2

UPC2412HF (NEC); +12V (1A)
POSITIVE VOLTAGE REGULATOR
- FRONT VIEW -

SN75176BP (TI) TTL-DIFFERENTIAL BUS TRANSCEIVER - TOP VIEW -

8 L 332 24 8 7

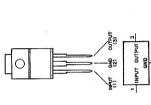
-

GND GND

0 W 4

T B INPUT/OUTPUT

BUS PORT



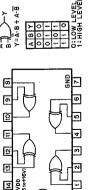
- RECEIVER -DIFFERENTIAL INPUTS ENABLE

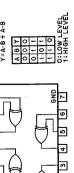
FUNCTION TABLE
- DRIVER -INPUT ENABLE
D DE

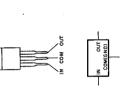
1; HIGH LEVEL 0; LOW LEVEL X; DON'T CARE HIZ; HIGH IMPEDANCE ?; INDETERMINATE

POSITIVE VOLTAGE REGULATOR (0.5A) - SIDE VIEW -UPC78M12H (NEC) +12V

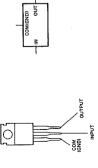
TC4030BP (TOSHIBA)
TC4030BPHB (TOSHIBA)
C-MOS EXCLUSIVE OR GATE
- TOP VIEW -



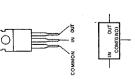




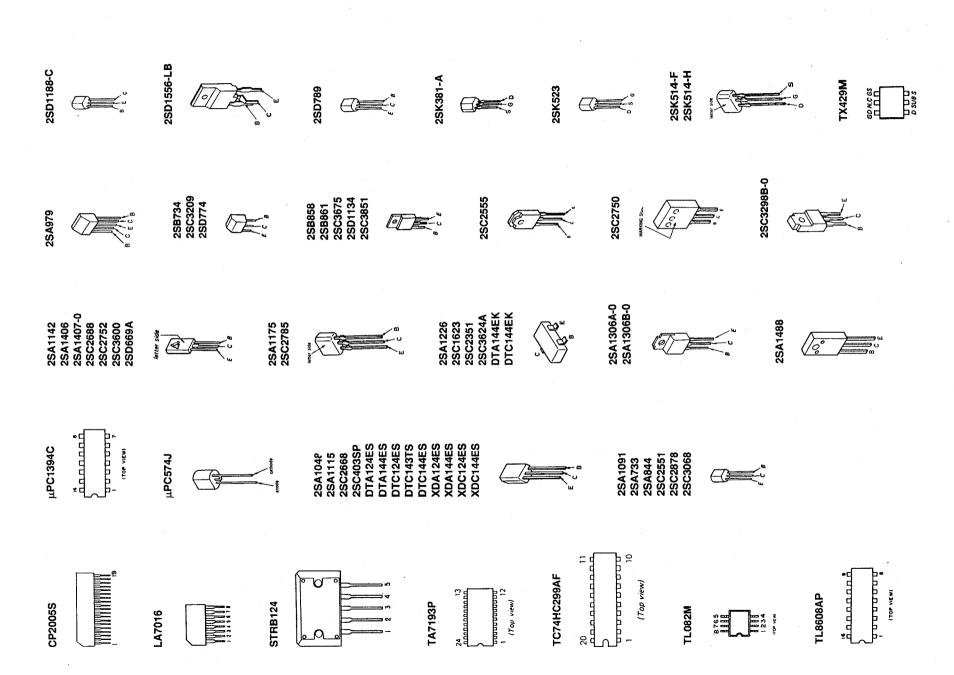
UPC7912H (NEC) — 12V NEGATIVE VOLTAGE REGULATOR (1A) — SIDE VIEW —

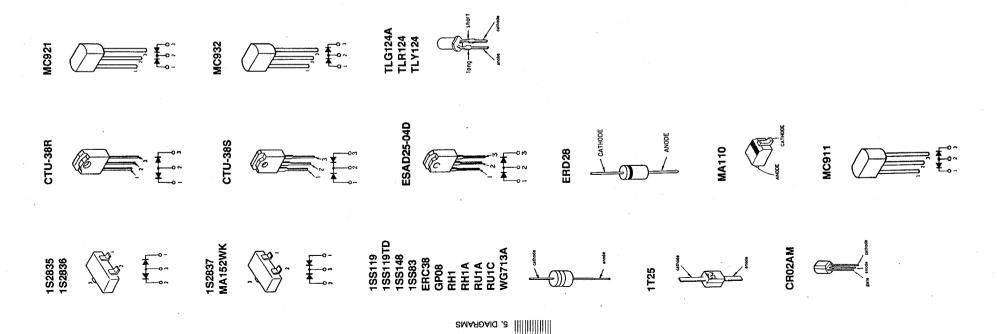


UPC79M12H (NEC) – 12V NEGATIVE VOLTAGE REGULATOR (0.5A) – SIDE VIEW –



TPUT OF OSC OUT MINAL FOR OSC DATA SELECTOR INSTRUCTION SIGNAL SIGNAL TIMING GENERATOR DATA INPUT SHIFT REGISTER UPD8142G-101 (NEC) FLAT PACKAGE C-MOS &BIT SERIALL INPUT CHARACTER DISPLAY - TOP VIEW -14 H SYNC IN
13 V SYNC IN
12 VB OUT
11 VG OUT
10 V BLK OUT 16 TEST IN ၁နှစ OSC OUT 6 V SYNC 13 H SYNC 14 S. 55 IN 44 OSC IN 7 OSC OUT E DATA IN 1 CLK IN 2 STB IN 3





### **EXPLODED VIEWS SECTION 6**

### 【使用上の注意】

▲および‱‱即の部品は,安全性を維持するために,重要な部品です。従って交換時は,必ず指定の部品を使用して下さい。

・組立部品の構成部品は備考欄に図面番号で示します。・\* 印の部品は常備在庫しておりません。・分解図中の機構部品で、図面番号のない部品は供給しません。・・XX, ・Xは標準部品のため、セットに付いている部品と異なる場合

があります。

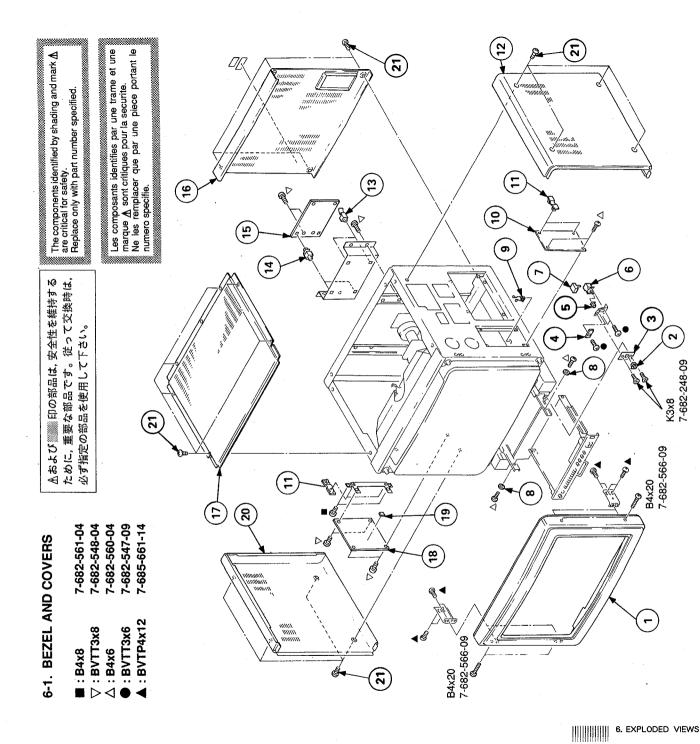
この資料に掲載されている部品の価格は、 7-ルト・サイスーハーンセンタ発行の<u>標準価格がおっ</u>の 最新版を参照してください。

- Items with no part number and no description are not stocked because they are seldom required for routine service.
   The construction parts of an assembled part are indicated with a collation number in the remark column.

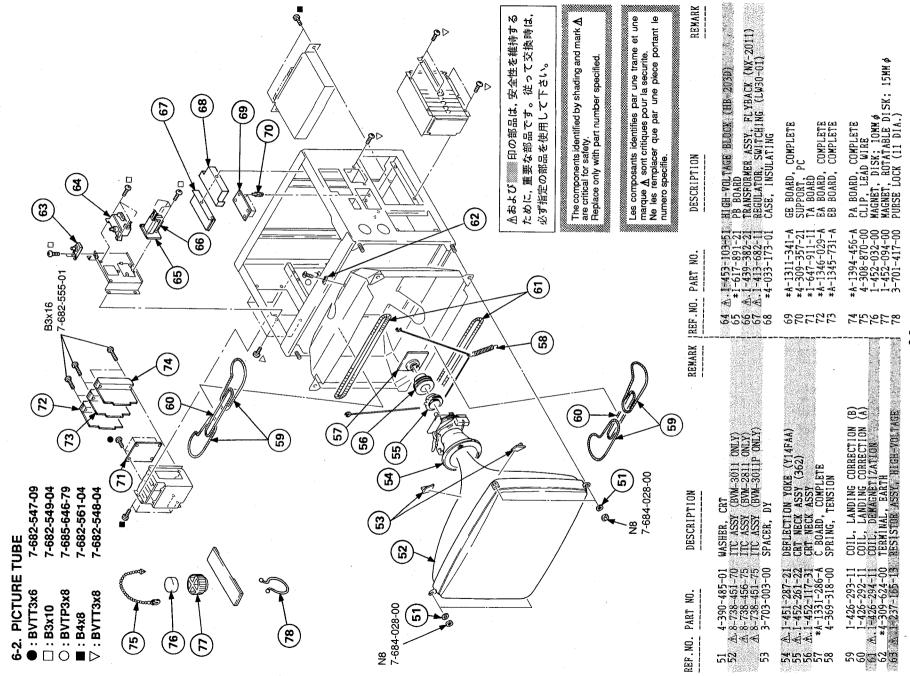
Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark  $\mathbb A$  are critical for safety. Replace only with part number specified.

Les composants identifies par une trame et une marque ≜ sont critiques pour la securita. Ne les remplacer que par une piece portant le numero specifie.

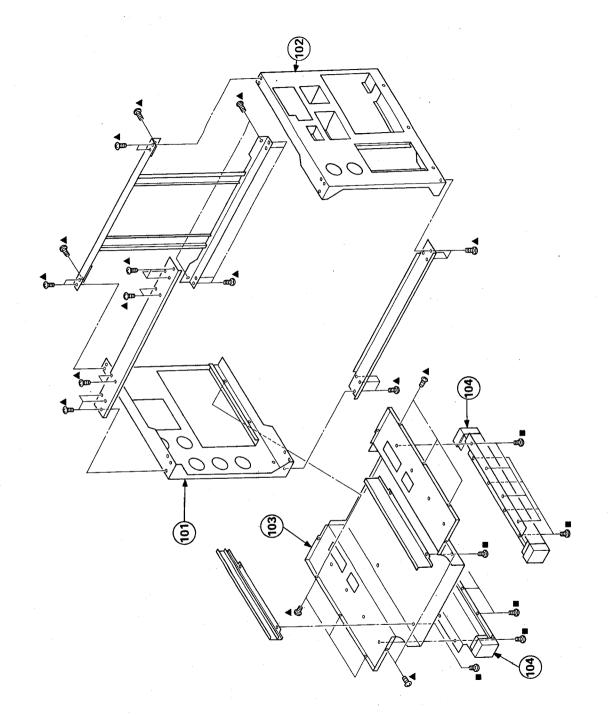


REMARK		
DESCRIPTION	CLIP, HINGE, CIRCUIT BOARD CABINET (R) HOLDER, PCB HINGE, PC BOARD BK BOARD, COMPLETE	COVER, REAR CABINET (T) DB BOARD, COMPLETE CUSHION CABINET (L) SCREW (OS), CASE, CLAW 4x8
REMARK REF.NO. PART NO.	*4-313-732-00 *4-393-001-01 *3-703-141-00 *4-353-620-02 *A-1135-464-A	4-393-004-11 *4-393-003-01 *A-1345-981-A 9-911-841-XX *4-393-002-01 4-847-802-00
K REF.		110 110 110 110 110 110 110 110 110 110
DESCRIPTION REMARK	BEZEL ASSY ESCUTCHEON (A) PANEL, POWER SWITCH Y BOARD, COMPLETE BUTTON (A)	SWITCH, PUSH (AC POWER). COVER, POWER SWITCH SPACER I PURSE LOCK (TYPE S) (DIA. 15) RI BOARD, COMPLETE
REF.NO. PART NO.	X-4378-936-4 4-379-423-11 4-042-169-01 *A-1373-426-A 4-374-839-21	**1-571-877-12 **4-393-095-01 **4-379-499-01 **4-379-43-4 **A-1394-473-A



6-3. CHASSIS

7-685-661-14 7-682-561-04 ▲: BVTP4x12 ■: B4x8



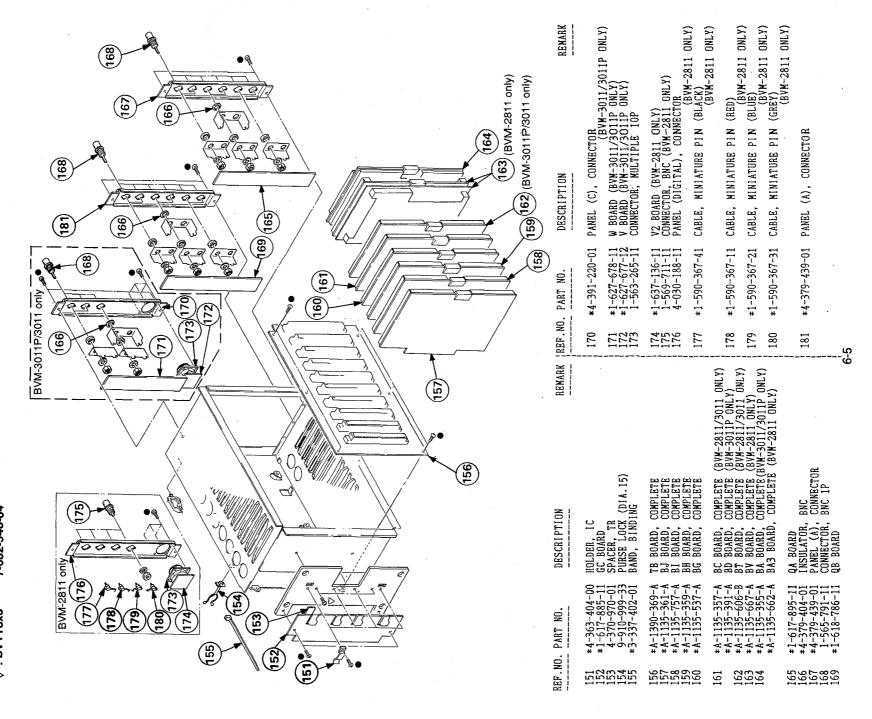
DESCRIPTION	CHASSIS (L) CHASSIS (R)
PART NO.	4-042-177-01 4-042-178-01
REF.NO.	101 102

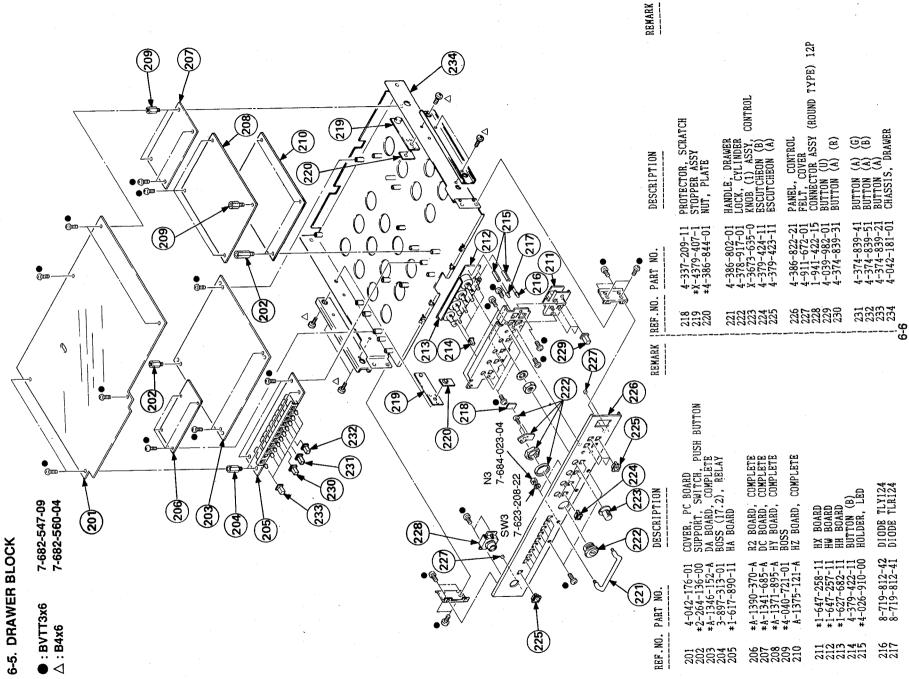
6. EXPLODED VIEWS

CHASSIS ASSY, BOTTOM LEG ASSY DESCRIPTION X-4031-427-1 X-4378-951-3 REMARK REF.NO. PART NO. 103 104

## 6-4. SIGNAL BLOCK

●: BVTT3x67-682-547-09∇: BVTT3x87-682-548-04





## 6-6. POWER BLOCK

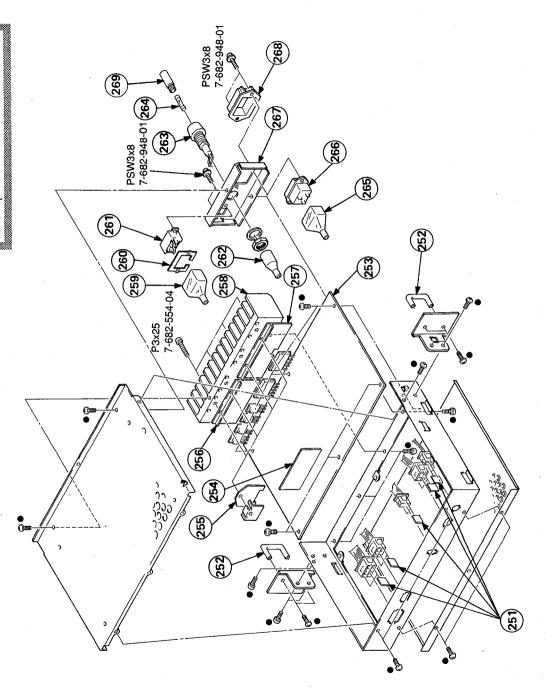
7-682-547-09 ●:BVTT3x6

▲および‱∭ 印の部品は, 安全性を維持するために, 重要な部品です。従って交換時は,必ず指定の部品を使用して下さい。

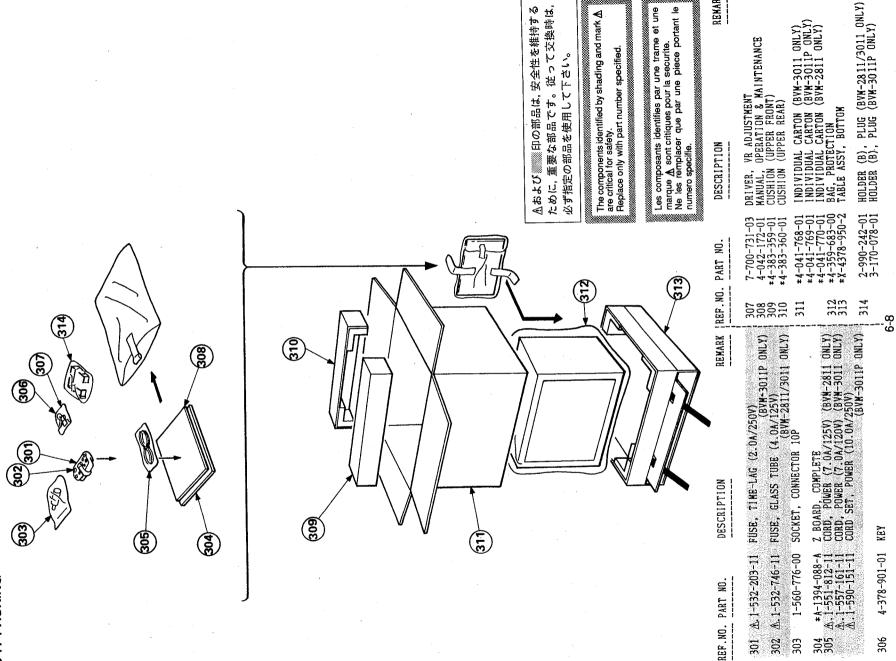
The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

Les composants identifies par une trame et une marque <u>A</u> sont critiques pour la securite.

Ne les remplacer que par une piece portant le numero specifie.



REMARK		50V) (BVM-3011P ONLY) //35U)	(-2811/3011 ONLY)			
DESCRIPTION	SELECTOR, POWER VOLTAGE COVER, FUSE HOLDER HOLDER, FUSE	264 A.1-532-203-11 FUSE, TIME-LAG (2.0A/250V) (BVM-3011P ONLY)	#4-601-466-11 COVER, 3P INLET (BVM-2811/3011 DNLY)	MUET 3P		
REMARK REF.NO. PART NO.		264	265 *4-601-466-11	266 A 1-580-375-11 267 *4-379-430-01	269 1-533-168-21	-
REMARK	254 BVM-2011D ONIV)	(BVM-2811/3011 ONLY)		ING	ď	
DESCRIPTION	SPACER, SOLENOID IANDLE, DRAWER IA BOARD, COMPLETE	*A-1316-167-A GA BOARD, COMPLETE	GB BOARD INSULATOR (G3)	4-379-410-01 SPACER (42), POLISHING 4-379-403-01 SPACER (GI), POLISHING *4-347-706-00 HEAT SINK (TR)	4-371-879-02 COVER, AC SELECT 4-379-409-01 NUT, PLATE	
	-A110	₩.	110	358	-02	
REF.NO. PART NO.	3-675-469-00 *4-379-421-01 *A-1316-165-A	*A-1316-167	*1-627-679- *4-379-408-	4-3/9-410- 4-379-403- *4-347-706-	*4-371-879 *4-379-409	



REMARK

## **ELECTRICAL PARTS LIST SECTION 7**

### [使用上の注意]

△ および ‱ 印の部品は,安全性を維持する ために,重要な部品です。従って交換時は,必 ず指定の部品を使用して下さい。

図面番号で部品を指定するときは基板名又は ブロックを併せて指定して下さい。 お願い

この資料に掲載されている部品の価格は, ワールトーリマスーハーンセン発行の<u>標準価格ハントラック</u>の 最新版を参照してください。

- 印の部品の定数は、X線量規制の規格を満足させるため、製造時セット毎に確認し決定したものです。 万一この部品を交換する場合は、セットに付いている部品と同一のもの、 ど使用下さい。 コンデンサの単位でMFはμFを,PFはμμを示します。 抵抗の単位Ωは省略してあります。

## 金属被膜:金属被膜抵抗

- 酸金核膜:酸化金属核糖基抗。 備寿欄のFは不然性柱抗を示します。 インダクタの単位で,MMFはmHを,UHはtuHを示します \* 印の部品は常備在庫しておりません。 受注して供給できるまで,日数を要します。 -XX,-Xは標準部品のため,セットに付いている部品と異なる場合がありま
- す。 半導体の名称でUA...,UPA...,UPB...,UPC...,UPD...等はそれぞれµA..., µPA...,µPB...,µPD...æ示します。 ここに記載されている部品は,補修用部品であるため,回路図及びセットに ついている部品と異なる場合があります。

### NOTE

- The components identified by shading and mark  $\Delta$  are critical for safety.
  - only with part number Replace c specified.
- Les composants identifies par une trame et une marque. A sont critiques pour la securite.

  Ne les remplacer que par une piece portant le numero specifie.
- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- RESISTORS
  All resistors are in ohms
  F: nonflammable

. .

- When indicating parts by reference number, please include the board name.
- CAPACITORS

   MMH: mH, UH: μH

  The components identified by **M** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.

  Should replacement be required, replace only with the value originally used.

TSIT	STAA9	7. ELECTRICAL	11011111111111
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REMARK						>-	>		>	>	>	<b>A</b>	
器!	16V 16V 16V 16V 50V	16V 16V	16V 16V 16V	16V 16V 50V 50V	λnς	50V 50V 50V 500V	16V 50V 500V	167	50V 500V 16V 50V	500 500 500 500 160	50V 50V 500V 16V 50V	500V 500V 16V 50V	50V 16V 16V
	%%%% 0000 7777	20 <b>%</b> 20 <b>%</b>	20% 20% 20%	20 <b>%</b> 20 <b>%</b>			20% 20% 20%	20%	5% 20% 5%% 5%%	20% 0.5PF 1PF 20%	% % %0 % 20 72 20 72	20% 20% 50% 20%	200.5 200.5
NO:	10NF 10NF 10NF 10NF 0.01NF	470MF 100MF	100MF 100MF 100MF	100MF 100MF 0.01MF	U.UIMF	0.01MF 0.01MF 0.01MF 0.01MF	10MF 15PF 0.47MF 0.001MF	10MF	15PF 0.47MF 0.001MF 10MF 39PF	0.47NF 10PF 5PF 0.001NF 10NF	15PF 0.47MF 0.001MF 10MF 15PF	0.47MF 0.001MF 10MF 15PF 0.47MP	180PF 10PF 10MF 47MF
DESCRIPTION	BLECT BLECT BLECT BLECT CERAMIC	BLECT BLECT	BLECT BLECT	BLECT BLECT CERAMIC CERAMIC	CERAMIC	CERANIC CERANIC CERANIC CERANIC	BLECT CERAMIC BLECT CERAMIC	BLECT	CERAMIC ELECT CERAMIC ELECT CERAMIC	BLECT CERAMIC CERAMIC CERAMIC BLECT	CERAMIC ELECT CERAMIC ELECT CERAMIC	ELECT CERANIC ELECT CERANIC ELECT	CERANIC CERANIC ELECT ELECT
PART NO.	1-126-964-11 1-126-964-11 1-126-964-11 1-126-964-11 1-126-964-11	1-126-103-11 1-126-101-11	1-126-101-11 1-126-101-11 1-126-101-11	1-126-101-11 1-126-101-11 1-101-004-00 1-101-004-00	1-101-004-00	1-101-004-00 1-101-004-00 1-101-004-00 1-101-004-00 1-102-038-00	1-126-964-11 1-102-951-00 1-124-902-00 1-102-038-00	1-126-964-11	1-102-951-00 1-124-902-00 1-102-038-00 1-126-964-11 1-102-965-00	1-124-902-00 1-102-947-00 1-102-942-00 1-102-038-00 1-126-964-11	1-102-951-00 1-124-902-00 1-102-038-00 1-126-964-11 1-102-951-00	1-124-902-00 1-102-038-00 1-126-964-11 1-102-951-00 1-124-902-00	1-102-976-00 1-102-947-00 1-126-964-11 1-124-910-11
REF. NO.	33333 33333	C51 C52	8558 8548	654 672 673		C74 C75 C76 C77 C101	C102 C103 C104 C201		3302 3302 3302 3302 3302 3302 3302 3302	C304 C305 C401 C402	C403 C501 C503	C504 C601 C603 C604	C701 C703 C704 C704
REMARK	IIP ONLY)								16V 16V 16V	16V 16V 50V	508 168 168	16V 16V 16V 16V 16V	50V 50V 16V
	M-3011/301					BLOCK BLOCK BLOCK	BLOCK BLOCK		68888 50000 50000	<b>%%% 2</b> 70 <b>%%</b> 70000 70000	22222 2000 2000 2000	%%%% % 0000 0 0000 0 0000 0	20%
ION	BA BOARD, COMPLETE(BVM-3011/3011P ONLY) ************************************	:	CONNECTOR 2P CONNECTOR 2P CONNECTOR 2P	CONNECTOR 2P	CIRCUIT BLOCK>	CIRCUIT	CIRCUIT		47MF 47MF 10MF	47MF 47MF 47MF 0.01MF	0.01MF 470MF 100MF 100MF	100MF 100MF 10MF 10MF	0.047MF 0.01MF 10MF
DESCRIPTION	BA BOARD, COMPLET: ************************************	=	PIN, CONNE		<composition c<="" td=""><td></td><td>COMPOSITION</td><td><capacitor></capacitor></td><td>BLECT BLECT BLECT</td><td>ELECT ELECT ELECT CERAMIC</td><td>CERAMIC BLECT BLECT BLECT</td><td>ELECT BLECT BLECT BLECT BLECT GREAT</td><td>CERAMIC CERAMIC ELECT</td></composition>		COMPOSITION	<capacitor></capacitor>	BLECT BLECT BLECT	ELECT ELECT ELECT CERAMIC	CERAMIC BLECT BLECT BLECT	ELECT BLECT BLECT BLECT BLECT GREAT	CERAMIC CERAMIC ELECT
PART NO.	*A-1135-355-A *4-353-708-00 8-729-119-78	CON.	*1-566-054-11 *1-566-054-11 *1-566-054-11 *1-566-054-11	*1-566-054-11 *1-566-054-11	MOD>	1-233-030-11 1-233-030-11 1-233-030-11 1-233-030-11	1-233-030-11 1-233-030-11	<cap,< td=""><td>1-124-910-11 1-124-910-11 1-124-910-11 1-126-964-11</td><td>1-124-910-11 1-124-910-11 1-124-910-11 1-124-910-11 1-101-004-00</td><td>1-126-103-11 1-126-101-11 1-126-101-11 1-126-101-11</td><td>1-126-101-11 1-126-101-11 1-126-101-11 1-126-964-11 1-126-964-11</td><td>1-101-006-00 1-101-004-00 1-126-964-11</td></cap,<>	1-124-910-11 1-124-910-11 1-124-910-11 1-126-964-11	1-124-910-11 1-124-910-11 1-124-910-11 1-124-910-11 1-101-004-00	1-126-103-11 1-126-101-11 1-126-101-11 1-126-101-11	1-126-101-11 1-126-101-11 1-126-101-11 1-126-964-11 1-126-964-11	1-101-006-00 1-101-004-00 1-126-964-11
REF. NO.			BA2 BA3 BA3			2202£			5252F	් ප්රස්ථාව		338842 33884 33884 33884 33884 33884 33884 33884 33884 33884 33884 33884 33884 33884 33884 33884 33884 33884 3384 34	3221

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	0-0-0-3 0-0-3	9999 <sub>6</sub>	ያ ማማማ	2	2000 2000 2000 2000 2000 2000 2000 200	##### ###### #########################	344 444 444 444 444 444 444 444 444 444	म् स्यास स्र		%%%%% വവവവവ	%%%%% ````````````````````````````````	%%%%% വവവവവ	₩ %%%%% %%%%%	22%
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DESCRIPTION	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR	TRANSI TRANSI TRANSI	TRANSI TRANSI TRANSI TRANSI TRANSI	TRANSI TRANSI TRANSI TRANSI	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR	TRANSISTOR TRANSISTOR TRANSISTOR	STOR>	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON CARBON METAL CARBON	CARBON METAL
PART NO.	-729-266-82 -729-266-82 -729-266-82 -729-266-82	729-266-82 -729-266-82 -729-266-82 -729-266-82 -729-384-48	-729-26 -729-26 -729-26	8-729-384-48 8-729-266-82 8-729-266-82 8-729-266-82 8-729-266-82	3-729-266-82 3-729-119-76 3-729-119-78 3-729-119-78 3-729-119-78	1-729-119-78 1-729-119-76 1-729-119-78 1-729-119-76	-729-119-76 -729-119-76 -729-119-76 -729-119-76 -729-119-78	-729-800-10 -729-119-78 -729-119-76	<res1< td=""><td>1-249-405-11 1-249-405-11 1-249-405-11 1-249-437-11 1-249-405-11</td><td>1-249-432-11 1-249-434-11 1-249-422-11 1-249-405-11 1-249-405-11</td><td>1-249-433-11 1-249-405-11 1-249-437-11 1-249-429-11 1-249-417-11</td><td>-249-418-11 -249-425-11 -249-405-11 -215-437-91 -249-430-11</td><td>.249-433-11 -215-427-00</td></res1<>	1-249-405-11 1-249-405-11 1-249-405-11 1-249-437-11 1-249-405-11	1-249-432-11 1-249-434-11 1-249-422-11 1-249-405-11 1-249-405-11	1-249-433-11 1-249-405-11 1-249-437-11 1-249-429-11 1-249-417-11	-249-418-11 -249-425-11 -249-405-11 -215-437-91 -249-430-11	.249-433-11 -215-427-00
N	1205 1302 1304 1304 1304 1304 1304 1304 1304 1304	4403 4403 403 88888 88888			~~~~~~~	&&&&&	<u></u>	∞∞∞			. — — — —			+
REF	\$\$\$\$ 		0405 0502 0502	0504 0505 0602 0603 0603	0.05 0.701 0.702 0.703 0.703	0705 0706 0707 0708 0708	0710 0711 0712 0713 0714	0715 0716 0717		22 22 22 22 24 25	R6 R7 R9 R10	RE122 104 104 101	R103 R103 R104 R105 R106	R107 R108
REMARK	50V 25V 16V 50V 50V	2006	20A 20V											
	%%% 2 %%000 2 %%%	22002 22002 22002 22002	UU %%											
PTION	1MF 4.7MF 10MF 100PF 0.0068MF	0.001MF 1MF 100PF 150PF	0.01MF 100PF	CERAMIC CERAMIC Y. TRIMMER CERAMIC C. TRIMMER	CERAMIC R, TRIMMER CCBRAMIC R, TRIMMER CERAMIC	0ESB2 1 1	3ESB2 19 19	25 555		U	DTC144ES 2SA844-E	DTC144ES DTC144ES DTA144ES 2SC2668-0	25.0268-0 25.0268-0 25.0268-0 25.0268-0 25.0268-0	SC2668 SA844-
DESCRIPT			FILM CERAMIC NWER>	CAP, VAI TRIMAR, CAP, VAI TRIMAR, CAP, VAI	TRIMAR, CAP, VA TRIMAR, CAP, VAI	DE> DIODE RD3.0ES DIODE MC921 DIODE MC911 DIODE MC911		00E 1SS 00E 1SS 00E 1SS 00E 1SS		IC CX-894 IC CX-894 IC UPD4053B	STOR> ANSISTOR ANSISTOR ANSISTOR	RANSISTOR RANSISTOR RANSISTOR RANSISTOR RANSISTOR	STOR BUT	RANSI
PART NO.	1-124-903-11 1-123-369-00 1-126-964-11 1-102-973-00 1-130-481-00	1-130-471-00 1-124-903-11 1-102-973-00 1-101-361-00	1-136-153-00 1-102-973-00 <tri< td=""><td>1-141-179-12 1-141-260-00 1-141-179-12 1-141-260-00 1-141-179-12</td><td><math>egin{array}{c} 1-141-260-00 \\ 1-141-179-12 \\ 1-141-260-00 \\ 1-141-179-12 \\ 1-141-260-00 \\ 1-141-260-00 \\ \end{array}</math></td><td><pre></pre></td><td>-719-109 -719-911 -719-911 -719-911</td><td>-719-911-1 -719-911-1 -719-911-1</td><td></td><td>8-759-208-94 8-759-208-94 8-759-140-53</td><td>CTBANSI 8-729-900-89 TR 8-729-384-48 TR 8-729-900-89 TR</td><td>8-729-900-89 8-729-900-89 8-729-900-65 8-729-266-82 8-729-266-82</td><td></td><td>8-729-266-82 8-729-384-48</td></tri<>	1-141-179-12 1-141-260-00 1-141-179-12 1-141-260-00 1-141-179-12	$egin{array}{c} 1-141-260-00 \\ 1-141-179-12 \\ 1-141-260-00 \\ 1-141-179-12 \\ 1-141-260-00 \\ 1-141-260-00 \\ \end{array}$	<pre></pre>	-719-109 -719-911 -719-911 -719-911	-719-911-1 -719-911-1 -719-911-1		8-759-208-94 8-759-208-94 8-759-140-53	CTBANSI 8-729-900-89 TR 8-729-384-48 TR 8-729-900-89 TR	8-729-900-89 8-729-900-89 8-729-900-65 8-729-266-82 8-729-266-82		8-729-266-82 8-729-384-48
REF. NO.	C706 C707 C708 C709 C710	C712 C713 C714 C715	C717	CV101 CV102 CV201 CV202 CV401	CV501 CV501 CV601 CV602	01 02 04 0701	0702 0703 0704 0705	0707 0708 0709 0710		1322	77.F E (E) (E)	5 5 101 102		

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	NOI	1.8%	560 100 2.7K	2.2K 10	22K 56K 1K	3.98	10K 2.2K	1.2K	22K 22K 2.7K	22K	2.7K 4.7K 270	6.2K	56K 100K 47K	108 56K	470K 33K	2.2K	22.7%		4.7K 100 100K	∨	5.6×	STOR>	CERMET 500 CERMET 500	E E E E E E E E E E E E E E E E E E E	
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	PART NO.	1-215-427-00	1-215-415-00 1-249-405-11 1-215-431-00	9-42 9-39	1-249-433-11 1-249-438-11 1-249-417-11	424	1-249-417-11 1-249-429-11 1-249-421-11 1-249-411-11	1	1-249-454-11 1-249-433-11 1-249-422-11	1-249-433-11	1-249-422-11 1-249-425-11 1-249-410-11	1-247-850-11	1-249-438-11 1-249-441-11 1-249-437-11	249-429 249-438	1-247-895-00 1-249-425-11 1-249-435-11	249-42 249-42	1-249-422-11 1-249-422-11 1-249-421-11	1-249-421-11	1-249-425-11 1-249-405-11 1-249-441-11	1-249-455-11	1-202-473-00 1-249-389-11 1-249-389-11	<var.< th=""><th>1-237-514-21 1-237-514-21</th><th>222</th><th></th></var.<>	1-237-514-21 1-237-514-21	222	
	REF.NO.	R608	R609 R610 R611	R612 R613	R701 R702 R703	R705	R707 R708 R708	R710	R712 R712 R713	R715	R716 R717 R718	R720	R721 R722 R723	R725	R726 R727 R728	R730	R731 R732 R733	R735	R736 R737 R738	R740	R741 R906 R907		RV101 RV201	RV501 RV601	
	REMARK																								
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	REF.NO. P	828	52033			C19 1 C20 1 C21 1	C2332 C2332 C254 C254 C254 C254 C254 C254 C254 C25	, , , , , , , , , , , , , , , , , , , ,			0 0 0 0 0 0		2222		32	538 538 538 538 538 538	090		267 268 268	693 C20 C31
	REMARK													(Y-C DELAY TIME) (B-Y SYSTEM PHASE) (APL) R DIFFERENCE LEVEL)	E LEVEL)			ONLY)		50V 50V
		1/46	1/40	1/46	1/4W 1/4W 1/4W	1/40 1/40 1/40	1/46 1/46 1/46 1/46	1/40	1/40 1/40	1/4W 1/4W 1/4W	1/4W 1/4W 1/4W	1/46	1/4	-C DELAY T. B-Y SYSTEM APL) DIFFERENCE	DIFFERENCE			<pre>************************************</pre>		0.5PF 0.5PF
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	DESCRIPTION	CARBON CARBON CARBON	CARBON CARBON CARBON CARBON	CARBON CARBON METAL CARBON	METAL METAL METAL	CARBON CARBON METAL	METAL METAL METAL CARRON	CARBON METAL METAL METAL METAL	METAL CARBON	CARBON CARBON CARBON	CARBON CARBON CARBON	CARBON	SI	RES, ADJ, RES, ADJ, RES, ADJ, RES, ADJ,	RES, ADJ,	<crystal></crystal>	OSCILLATOR,	**************************************	HOOK, FINGER	<pre><capacitor> -00 CERAMIC -00 CERAMIC</capacitor></pre>
)	PART NO.	1-249-421-11 (1-249-441-11 (1-249-417-11 (1-249-41-1				1-249-422-11 1-249-405-11 1-215-421-00			1-215-477-00 $1-215-457-00$ $1-249-429-11$			1-249-422-11 1-249-429-11	1-249-429-11 <var]< td=""><td>1-237-500-21 1-237-504-21 1-237-499-21 1-237-501-21</td><td>1-237-501-21</td><td><cr.y.< td=""><td>1-567-505-11</td><td>**************************************</td><td>*4-353-708-00</td><td><pre><cap< td=""></cap<></pre></td></cr.y.<></td></var]<>	1-237-500-21 1-237-504-21 1-237-499-21 1-237-501-21	1-237-501-21	<cr.y.< td=""><td>1-567-505-11</td><td>**************************************</td><td>*4-353-708-00</td><td><pre><cap< td=""></cap<></pre></td></cr.y.<>	1-567-505-11	**************************************	*4-353-708-00	<pre><cap< td=""></cap<></pre>
2	REF.NO.	R55 R56 R57	R58 R59 R61	R63 R64 R65 R65	R69 R70 R71	R72 R73 R74	R77 R78 R79 R80	265 288 288 288 288 288 288 288 288 288 28	R888 R90	R91 R95 R96	R101 R102 R103	R104 8105	K202	RV1 RV2 RV3 RV4	RV5		XI	* * * *		58

TSLECTRICAL PARTS LIST

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	REF. NO	R70	R72 R73 R74	R75	R76 R77 R78 B70	R80	R822 R832 R83	1882	888 8887 8887 8887 8887	R90	R91 R92 R93	R94	R96 R97	R100	R101 R102 R103	R105	R106 R107 R108	R110	R115 R116 R120	R130	R150 R201	R204	R220 R221 R222	R251	R252 R254 R255	R301	R302 R303
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	DESCRIPTION	TRANSISTOR TRANSISTOR	SISTOR>	CARBON	CARBON METAL METAL	METAL METAL METAL	METAL METAL	METAL METAL	CARBON CARBON CARBON		METAL METAL METAL		METAL CARBON CARBON	CARBON	CARBON CARBON CARBON	CARBON	METAL METAL METAL	CARBON WETAL	METAL METAL METAL	METAL	CARBON CARBON CARBON	CARBON	METAL METAL CARBON		METAL METAL CARBON	CARBON	METAL CARBON
	PART NO.	8-729-900-63 8-729-900-63	AR.	-249-42 -249-42	1-249-422-11 1-215-425-00 1-215-395-00	1-215-421-00 1-215-421-00 1-215-421-00	-215-42 -215-42	15-39	1-249-425-11 1-249-429-11 1-249-429-11	1-249-433-11 1-215-425-00	1-215-425-00 1-215-425-00 1-215-425-00	1-249-405-11 $1-215-441-00$	1-215-469-91 1-249-427-11 1-249-415-11	49-415	1-249-422-11 1-249-405-11 1-247-903-00	19-429 15-407	1-215-407-00 1-215-413-00 1-215-443-00	9-441	1-215-421-00 1-215-429-00 1-215-445-00	1-215-421-00 1-249-433-11	1-249-429-11 1-249-429-11 1-249-441-11	3-425 3-422	1-215-418-00 1-215-420-00 1-249-415-11	1-249-422-11 1-249-422-11	1-215-418-00 1-215-420-00 1-249-415-11	1-249-422-11 $1-215-477-00$	5-43 9-40
٦,	REF.NO.	Q103 Q104		R1 R2	R3 R5	R6 R7 R8	R9 R10	R11 R12	R13 R15	R17 R18	R19 R20 R21	R22 R23	R24 R25 R26	R27	R29 R30 R31	R32 R34	R35 R36 R37	R38 R39	R40 R41 R42	R43	к45 R46 R47	R48 R54	R55 R56 R57	R58 R59	R60 R61 R62	R63 R64	R65 R66

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ART NO.	-729-900-63 -729-384-48 -729-119-78 -729-119-78	3-729-384-48 8-729-800-10	<res.< td=""><td>-249-405-11 -215-396-00</td><td>1-213-451-00 1-249-419-11 1-249-405-11</td><td>-249-405-11</td><td>-247-830-11 -249-417-11 -249-417-11</td><td>-215-462-00</td><td>1-249-426-11 1-247-903-00 1-215-477-00 1-249-429-11</td><td>429</td><td>-215-421-00 -215-421-00 -249-441-11</td><td>-215-409-00 -215-380-00</td><td>-215-380-00 <math>-215-409-00</math> <math>-249-429-11</math></td><td>-249-417-11</td><td>-215-418-00 -249-422-11 -249-405-11 -249-420-11</td><td>429-1</td><td>-249-428-11 -249-417-11 -249-422-11</td><td>-249-409-11 -249-425-11</td><td>1-249-422-11 1-249-417-11 1-249-417-11</td><td>-249-431-11 -249-431-11</td><td>-249-417-11 -249-423-11 -249-423-11</td><td>-249-405-11</td><td>-249-422-11 -247-903-00 -247-866-11</td><td>4204</td><td>-249-422-11 -249-405-11</td><td>1-249-422-11 1-249-422-11 1-249-422-11</td></res.<>	-249-405-11 -215-396-00	1-213-451-00 1-249-419-11 1-249-405-11	-249-405-11	-247-830-11 -249-417-11 -249-417-11	-215-462-00	1-249-426-11 1-247-903-00 1-215-477-00 1-249-429-11	429	-215-421-00 -215-421-00 -249-441-11	-215-409-00 -215-380-00	-215-380-00 $-215-409-00$ $-249-429-11$	-249-417-11	-215-418-00 -249-422-11 -249-405-11 -249-420-11	429-1	-249-428-11 -249-417-11 -249-422-11	-249-409-11 -249-425-11	1-249-422-11 1-249-417-11 1-249-417-11	-249-431-11 -249-431-11	-249-417-11 -249-423-11 -249-423-11	-249-405-11	-249-422-11 -247-903-00 -247-866-11	4204	-249-422-11 -249-405-11	1-249-422-11 1-249-422-11 1-249-422-11
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DESCRIPTION	CARBON	CARBON CARBON CARBON	CARBON	CARBON	CARBUN	CARBON CARBON METAL CARBON	CARBON	CARBON	CARBON CARBON CARBON	CARBON	CARBON	CARBON	METAL CARBON METAL METAL	CARBON	CARBON CARBON METAL CARBON	CARBON	CARBON METAL CARBON CARBON	METAL	CARBON CARBON METAL METAL	METAL	CARBON METAL CARBON CARBON	METAL	CARBON METAL METAL	METAL	METAL METAL CARBON	CARBON	CARBON CARBON CARBON CARBON
PART NO.	1-249-422-11	1-249-417-11 1-249-417-11 1-249-431-11	1-249-423-11	1-249-422-11 1-249-405-11	1-249-422-11	1-247-903-00 1-247-866-11 1-215-445-00	1-249-420-11	1-249-405-11	1-249-422-11 1-249-422-11 1-249-422-11	1-249-403-11	1-247-903-00 $1-249-420-11$	1-249-405-11 1-247-866-11	1-215-445-00 1-249-422-11 1-215-430-00	1-249-430-11	1-249-405-11 1-247-830-11 1-215-421-00	1-249-422-11	1-249-422-11 1-215-438-00 1-249-431-11	1-215-435-00	1-249-422-11 1-249-422-11 1-215-409-00	1-215-427-00	1-249-425-11 1-215-436-00 1-249-431-11 1-249-417-11	1 - 215 - 435 - 00 $1 - 249 - 422 - 11$	1-249-422-11 $1-215-409-00$ $1-215-414-00$	1-215-422-00	1-215-380-00 1-215-380-00 1-249-433-11	1-249-425-11	1-249-437-11 1-249-429-11 1-249-435-11 1-247-872-11
REF.NO.	R61	R63 R63	R65 R66 R67	868 869 870	K/0	R72 R73	R75	R76	R78 R79	no0	R825	888 888 488	R8878	R90	R91 R92 R93	R98	R99 R161 R162	R164	R165 R166 R167	R169	R170 R171 R172	R174	R176 R177 R178	R179	R181 R182 R183	R184	R202 R203 R204

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PART NO.	1-233-011-11 1-232-737-11 1-231-938-00 1-231-756-11 1-232-726-11	2-726 2-726 2-726 2-726	32-726-1 32-726-1 32-726-1 32-726-1 32-726-1	10>	8-719-911-19 8-719-911-19 8-719-911-19 8-719-911-19	8-719-911-19	\	8-759-140-53 8-759-140-53 8-759-140-53 8-759-140-53 8-759-700-08	8-759-700-08 8-759-800-81 8-759-800-81 8-759-140-53	, `	8-759-240-81 8-759-240-81 8-759-040-01 8-759-207-73 8-766-001-49	8-759-503-91 8-766-001-49 8-759-503-91 8-766-001-49 8-759-503-91	<tra< td=""><td>8-729-119-78 8-729-105-71 8-729-384-48 8-729-119-78</td><td>-729-10 -729-38 -729-11</td><td>29-384-4 29-119-7</td><td>8-729-105-71 8-729-384-48 8-729-384-48</td></tra<>	8-729-119-78 8-729-105-71 8-729-384-48 8-729-119-78	-729-10 -729-38 -729-11	29-384-4 29-119-7	8-729-105-71 8-729-384-48 8-729-384-48
REF.NO.	CP31 CP33 CP101	CP1043 CP201 CP201 CP202	CP204 CP301 CP302 CP303	CF 504	0101 0102 0201 0202	0301 0302		123221	10821	1010	1012 1013 1014 1014 10101	10201 10201 10202 10301 10302		5252	25 65 62	95	011 012 013
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ION	0.01MF 0.01MF 0.01MF 0.01MF	0.047WF 0.047WF 5PF 22PF 10MF	0.047MF 0.01MF 0.047MF 0.01MF	47PF 0.047MF 5PF 22PF	10MF 0.047MF 0.047MF	35	47PF 0.047MF 5PF 220F	10MF 0.047MF 0.01MF 0.047MF	.01 .01 7PF	IRCUIT BLOCK>	ON CIRCUIT BLC ON CIRCUIT BLC ON CIRCUIT BLC ON CIRCUIT BLC	CIRCUIT B CIRCUIT B CIRCUIT B CIRCUIT B	CIRCUIT	ON CIRCUIT BLC	ON CIRCUIT BLO ON CIRCUIT BLO ON CIRCUIT BLO ON CIRCUIT BLO	CIRCUIT B	ON CIRCUIT BLOOM
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SCRIPTION	-00 CERAMIC 150PF 5% -00 CERAMIC 150PF 5% -00 CERAMIC 150PF 5% -00 CERAMIC 150PF 5% -00 MYLAR 0 001WR 5%	00 CERANIC 470PF 5% -11 ELECT 1MF 20% -00 CERANIC 0.01MF	CERAMIC 0.01MF CERAMIC 0.001MF CERAMIC 68PF 5%	00 CERANIC 47PF 5% 00 CERANIC 68PF 5% 00 CERANIC 47PF 5% 00 CERANIC 330PF 5%	CERANIC 0.01MF 5% CERANIC 47PF 5% BLECT 47MF 20% BLECT 33MF 20% CERANIC 0.01MF	51 ELECT 33MF 20% 1	CERAMIC 0.01MF 5 CERAMIC 0.01MF 5	ELECT 10MF 20% 1 CERAMIC 0.01MF 5 CERAMIC 0.01MF 5 CERAMIC 0.01MF 5 5	ELECT 10MF 20% 1 CERANIC 0.01MF 5 CERANIC 0.01MF 5 CERANIC 0.01MF 5 FOR FRY 33MF	POSITION CIRCUIT BLOCK>	-11 COMPOSITION CIRCUIT BL COMPOSITION CIRCUIT BL COMPOSITION CIRCUIT BL COMPOSITION CIRCUIT BL COMPOSITION CIRCUIT BL	<0100E>	-19 DIODE ISSII -19 DIODE ISSII -19 DIODE ISSII -19 DIODE ISSIII -19 DIODE ISSIII	-19 DIODE ISSII -42 DIODE MC932	5 8 0 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	35 IC MC140278 35 IC MC140278 35 IC MC140278 35 IC MC140278
NO. DESCRIPTION R	01-361-00 CERAMIC 150PF 5% 01-361-00 CERAMIC 150PF 5% 01-361-00 CERAMIC 150PF 5% 01-361-00 CERAMIC 150PF 5% 30-471-00 WYLAR 0 001MR 5%	02-824-00 CERAMIC 470PF 5% 24-903-11 ELECT 1MF 20% 01-004-00 CERAMIC 0.01MF	-004-00 CERAMIC 0.01MF 10% -074-00 CERAMIC 0.001MF 10% -888-00 CERAMIC 68PF 5%	-880-00 CERANIC 47PF 5% -888-00 CERANIC 68PF 5% -880-00 CERANIC 47PF 5% -820-00 CERANIC 330PF 5%	CERANIC 0.01MF 5% CERANIC 47PF 5% BLECT 47MF 20% BLECT 33MF 20% CERANIC 0.01MF	51 ELECT 33MF 20% 1	CERAMIC 0.01MF 5 CERAMIC 0.01MF 5	ELECT 10MF 20% 1 CERAMIC 0.01MF 5 CERAMIC 0.01MF 5 CERAMIC 0.01MF 5 5	ELECT 10MF 20% 1 CERANIC 0.01MF 5 CERANIC 0.01MF 5 CERANIC 0.01MF 5 FOR FRY 33MF	POSITION CIRCUIT BLOCK>	2-738-11 COMPOSITION CIRCUIT BL 2-738-11 COMPOSITION CIRCUIT BL 2-738-11 COMPOSITION CIRCUIT BL 2-738-11 COMPOSITION CIRCUIT BL 2-738-11 COMPOSITION CIRCUIT BL	8	9-911-19 D10DE 1SS11 9-911-19 D10DE 1SS11 9-911-19 D10DE 1SS11 9-911-19 D10DE 1SS11 9-911-19 D10DE 1SS11	9-911-19 DIODE ISS11 9-016-42 DIODE MC932	345-38 IC   9-040-01 IC   9-240-40 IC   9-240-40 IC   9-000-35 IC	59-000-35 IC MC140278 59-000-35 IC MC140278 59-000-35 IC MC140278 59-000-35 IC MC140278
DESCRIPTION	CERANIC 150PF 5% CERANIC 150PF 5% CERANIC 150PF 5% CERANIC 150PF 5%	02-824-00 CERAMIC 470PF 5% 24-903-11 ELECT 1MF 20% 01-004-00 CERAMIC 0.01MF	101-004-00 CERAMIC 0.01MF 102-074-00 CERAMIC 0.001MF 10% 101-888-00 CERAMIC 68PF 5%	00 CERANIC 47PF 5% 00 CERANIC 68PF 5% 00 CERANIC 47PF 5% 00 CERANIC 330PF 5%	0.01MF 5% 47PF 5% 47MF 20% 33MF 20%	ELECT 33MF 20% 1 CERAMIC 0.01MF 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	CERAMIC 0.01MF 5 CERAMIC 0.01MF 5	10MF 0.01MF 0.01MF 0.01MF 55	ELECT 10MF 20% 1 CERAMIC 0.01MF 5 CERAMIC 0.01MF 5 FIRT 33MF 1	POSITION CIRCUIT BLOCK>	-738-11 COMPOSITION CIRCUIT BI -738-11 COMPOSITION CIRCUIT BI -738-11 COMPOSITION CIRCUIT BI -738-11 COMPOSITION CIRCUIT BI -738-11 COMPOSITION CIRCUIT BI	8	911-19	-911-19 DIODE ISS11 -016-42 DIODE MC932	5 8 0 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	5 IC MC140278 5 IC MC140278 5 IC MC140278 5 IC MC140278

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ON REMARK	CERMET 20K (H PULSE POSITION) CERMET 10K (BURST GATE PULSE WIDTH) CERMET 100K (SUNPRING PULSE POSITION)	CERMET 50K (INTERLACE) CERMET 20K (BRT PULSE) CERMET 20K (BURST GATE PULSE WIDTH) CERMET 50K (PIC SET UP)	<u> </u>	:*************************************	R (BK), TR	TOR 4P TOR 4P TOR 3P TOR 5P	:TOR 4P :TOR 4P :TOR 4P	0.01MF 5% 50V 10MF 20% 200V 0.01MF 5% 50V 0.01MF 50V	.01MF .01MF .01MF .01MF	SMF 20% SMF 20% SMF 20% SMF 20%	20000000000000000000000000000000000000		10MF 20% 200V
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. PART NO.	1-237-504-21 1-237-503-21 1-237-506-21	1-237-505-21 1-237-504-21 1-237-504-21 1-237-505-21	<sw: 1-570-857-11</sw: 	**************************************	4-370-970-01 *4-379-411-01 *4-902-345-01	*1-566-056-11 *1-566-056-11 *1-566-056-11 *1-566-055-11	*1-566-056-11 *1-566-056-11 *1-566-056-11	CCAP 1-130-483-00 1-123-939-00 1-130-483-00 1-101-004-00	1-101-004-00 1-101-004-00 1-101-004-00 1-101-004-00 1-101-004-00	1-124-034-51 1-124-034-51 1-124-034-51 1-124-034-51 1-124-034-51	1-124-034-51 1-124-034-51 1-124-034-51 1-124-034-51 1-124-034-51	$\begin{array}{c} 1 - 124 - 034 - 51 \\ 1 - 124 - 034 - 51 \\ 1 - 123 - 939 - 00 \\ 1 - 123 - 939 - 00 \\ 1 - 123 - 939 - 00 \\ \end{array}$	1-124-808-51
REF.NO.	RV3 RV4 RV5	RV6 RV7 RV8 RV9	SI	# # # # *		BK1 BK2 BK3 BK4 BK5	BK6 BK7 BK8	12110 12110	500000 5000000 50000000000000000000000		C70 C71 C73 C73 C73	C75 C76 C80 C81 C82	C83
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DESCRIPTION	CARBON METAL CARBON CARBON CARBON	CARBON CARBON CARBON METAL CARBON	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON METAL METAL	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON	<variable resistor=""></variable>
PART NO.	1-247-885-00 1-215-449-00 1-249-422-11 1-249-434-11 1-249-422-11	1-249-425-11 1-247-836-11 1-249-427-11 1-215-449-00 1-249-433-11	1-249-425-11 1-249-425-11 1-249-417-11 1-249-430-11 1-249-425-11	1-249-433-11 1-249-425-11 1-249-417-11 1-249-430-11 1-249-433-11	1-249-430-11 1-249-422-11 1-215-463-00 1-215-475-00 1-215-439-00	1-249-425-11 1-249-433-11 1-249-425-11 1-249-415-11 1-249-417-11	1-249-430-11 1-249-422-11 1-247-887-00 1-249-441-11 1-249-441-11	1-249-441-11 1-249-429-11 1-249-429-11 1-249-441-11 1-249-417-11	1-249-423-11 1-249-427-11 1-249-429-11 1-249-429-11 1-249-422-11	1-249-419-11 1-249-427-11 1-249-429-11 1-249-429-11 1-249-422-11		1-249-417-11 1-249-417-11 1-249-417-11 1-249-417-11 1-249-417-11	<vari< td=""></vari<>
REF. NO. 1	R52 R53 R54 R56	R58 R59 R61 R62	R63 R64 R65 R66 R67	R68 R69 R70 R71	R74 R75 R76 R77 R78	R79 R80 R81 R82 R83	R85 R87 R89 R91	R92 R93 R95 R96	R100 R111 R112 R113	R115 R1116 R1118 R1118	R120 R121 R122 R123	R126 R127 R128 R129	

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REF.NO.	01 02 0101 0102 0103	0104 - 0105 0106 0106 0108	0109 0110 01111 01112	D114 D115 D116 D201 D202	0203 0204 0205 0206 0206	0208 0209 0210 0211 0212	0213 0214 0215 0216 0301	0302 0303 0304 0305 0306	0307 0308 0309 0310	0312 0313 0314 0315 0316		101	0135 0132	0101 0102	Q103 Q104
REMARK	2000 2000 2000 2000	000 000 000 000 000 000	16V 25V 50V 200V 160V	500 500 500 500 500	50V 50V 160V 50V 200V	16V 25V 50V 200V 160V	50V 50V 50V 50V	50V 50V 160V 50V 200V	000 000 000 000	200 AA	204				
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DESCRIPTION	METAL METAL METAL METAL METAL	CARBON METAL METAL METAL OXIDE CARBON	CARBON METAL CARBON CARBON METAL	METAL METAL CARBON METAL OXIDE CARBON	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON METAL CARBON CARBON	CARBON CARBON METAL CARBON	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON METAL METAL METAL	METAL METAL CARBON MWTAL MWTAL	METAL OXIDE CARBON CARBON METAL CARBON	CARBON METAL METAL METAL CARBON	METAL OXIDE CARBON CARBON
PART NO.	1-215-391-00 1-215-391-00 1-215-437-91 1-214-765-00 1-214-765-00	1-249-405-11 1-214-956-00 1-215-459-00 1-216-430-11 1-249-405-11	1-249-405-11 1-215-405-00 1-249-405-11 1-249-405-11 1-215-394-00	1-215-394-00 1-214-779-00 1-249-430-11 1-216-443-11 1-249-433-11	1-249-422-11 1-249-435-11 1-249-433-11 1-249-426-11 1-249-423-11	1-247-903-00 1-249-426-11 1-215-441-00 1-249-405-11 1-249-413-11			1-249-405-11 1-249-405-11 1-215-391-00 1-215-391-00 1-215-437-91	1-214-765-00 1-214-765-00 1-249-405-11 1-214-956-00 1-215-459-00	1-216-430-11 1-249-405-11 1-249-405-11 1-215-405-00 1-249-405-11	1-249-405-11 1-215-394-00 1-215-394-00 1-214-779-00	1-216-443-11 1-249-433-11 1-249-422-11
REF. NO.	R112 R113 R114 R115	R117 R118 R119 R120 R121	R122 R123 R124 R125 R125	R127 R128 R129 R130	R133 R133 R134 R135	R137 R138 R140 R141	R142 R143 R201 R202 R204	R205 R206 R207 R207 R209	R210 R211 R212 R213 R213	R215 R216 R217 R218 R219	R220 R221 R222 R223 R223	R225 R226 R227 R227 R228	R230 R231 R232
REMARK													
<b>62</b> (									1/40	1/40 1/40 1/40 1/40	1/40 1/40 1/40 1/40	1/48 1/48 1/48 1/49	1/40 1/40 1/40 1/40
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PART NO.	-729-38 -729-80 -729-80 -729-80	-729-80 -729-80 -729-25 -729-11	8-729-119 8-729-266 8-729-384 8-729-119 8-729-119	8-729-384-48 8-729-804-63 8-729-804-58 8-729-804-58 8-729-804-63	1222	8-729-119-78 8-729-266-82 8-729-384-48 8-729-119-78	8-729-384-48 8-729-804-63 8-729-804-58 8-729-804-58 8-729-804-63	8-729-804-58 8-729-804-63 8-729-255-12 8-729-119-78 8-729-119-78	6-129-119-1 <r 1-249-429-1</r 	1-249-441-11 1-249-417-11 1-215-878-00 1-249-439-11 1-249-417-11	1-249-429-11 1-215-469-91 1-215-461-00 1-215-447-00 1-215-391-00	1-249-419-11 1-249-405-11 1-249-424-11 1-249-422-11 1-249-405-11	1-249-405-11 1-249-421-11 1-249-405-11 1-249-405-11
REF. NO.	4105 4106 4108 4109	QUIII QUIII QUII3 QUII3	0115 0201 0202 0203 0204	0200 0200 0200 0200 0000	0210 0211 0212 0213 0214	0215 0301 0302 0303 0304	0305 0306 0307 0308 0309	0310 0311 0313 0313 0314	4515 R1	R2 R3 R11 R11	RIS RIS RIG 101	R102 R104 R105 R106	R108 R1109 R1110

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	PART NO.	1-124-477-11 1-163-038-91 1-124-477-11	-163-369-11 -163-038-91 -163-101-00 -163-038-91 -163-227-11	-163-093-00 -163-038-91 -163-038-91 -163-038-91 -163-038-91	-163-099-00 -163-097-00 -163-251-11 -163-235-11	-163-235-11 -163-222-11 -163-038-91 -163-038-91	-163-113-00 -163-038-91 -163-038-91 -124-907-11 -163-097-00	-124-907-11 -123-875-11 -163-038-91 -123-875-11 -163-038-91	-123-875-11 -163-038-91 -124-478-11 -163-038-91 -124-907-11	-163-038-91 -124-477-11 -124-907-11 -124-907-11	-124-907-11 -163-038-91 -163-038-91 -163-038-91 -163-038-91	-163-038-91 -163-038-91 -163-038-91 -163-038-91 -163-038-91	1-163-038-91 1-163-038-91 1-163-038-91 1-123-875-11 1-163-038-91	[-123-875-11 [-163-038-91 [-163-038-91 [-123-875-11 [-163-038-91	
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	DESCRIPTION	CARBON CARBON CARBON	CARBON CARBON METAL CARBON	CARBON CARBON CARBON METAL CARBON	CARBON CARBON CARBON CARBON	CARBON CARBON METAL METAL	METAL CARBON MWTAL	MW TALL METAL OXIDE CARBON METAL METAL	CARBON CARBON METAL METAL ABTAL	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON	***** JARD, *****	HOOK, FINGER CITOR> ELECT	
	<u>.</u> :!	1-249-435-11 C 1-249-433-11 C 1-249-426-11 C							11 222				*******	-353-708-00 HOOK,  -253-708-00 CCAPACITOR>  -124-477-11 ELECT  -124-477-11 ELECT	
	PART NO	1-249 1-249 1-249	1-247 1-249 1-249 1-249	1-249 1-249 1-249 1-249	1-249 1-249 1-249	1-249 1-249 1-215 1-215	1-214 1-249 1-249	1-216 1-249 1-249	1-249 1-249 1-215 1-215	1-249 1-249 1-249 1-249	1-24	1-24 1-24 1-24	******	#4-35 1-12 1-12	

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DESCRIPTION	CERANIC CHIP 0.1MF CERANIC CHIP 0.1MF CERANIC CHIP 0.1MF	AMIC CHIP 0.1 AMIC CHIP 0.1 AMIC CHIP 0.1	MMER>	TRIMMER, CERAMIC TRIMMER, CERAMIC TRIMMER, CERAMIC	RIMMER, CERAMI RIMMER, CERAMI	/4		100E 1528 100E 1528 100E 1528 100E 1528	1006 MA15 1006 MA15 1006 MA15	AY LINE>	DELAY LINE DELAY LINE DELAY LINE DELAY LINE	ELAY LIN ELAY LIN ELAY LIN ELAY LIN	TER> FILTER, LOW PASS FILTER, LOW PASS	ILTER, LOW PAS	IC LA7016 IC LA7016 IC NJR7809FA IC NJR7809FA IC NJR7809FA	c cxL1009P	IC CXL1009P IC CXA1539P SOCKET>
PART NO.	1-163-038-91 1-163-038-91 1-163-038-91 1-163-038-91	-038-9 -038-9 -038-9	<tr1< td=""><td>1-141-304-21 1-141-304-21 1-141-304-21</td><td>-141-304 -141-304</td><td>40147</td><td>8-719-104-34 8-719-105-91 8-719-400-18 8-719-400-18</td><td>-719-104-3 -719-104-3 -719-104-3 -719-104-3</td><td>-719-400-1 -719-400-1 -719-400-1</td><td>. <del< td=""><td>1-415-348-21 1-415-477-11 1-415-700-11 1-415-654-12</td><td>-415-700-1 -415-700-1 -415-348-2 -415-700-1</td><td><fil 1-236-562-11 1-236-561-11</fil </td><td>-236-732-1 <i< td=""><td>8-759-800-81 8-759-800-81 8-759-701-78 8-759-701-75 8-752-334-78</td><td>-752-334-7</td><td>8-752-33-14 8-752-053-68 &lt;1C</td></i<></td></del<></td></tr1<>	1-141-304-21 1-141-304-21 1-141-304-21	-141-304 -141-304	40147	8-719-104-34 8-719-105-91 8-719-400-18 8-719-400-18	-719-104-3 -719-104-3 -719-104-3 -719-104-3	-719-400-1 -719-400-1 -719-400-1	. <del< td=""><td>1-415-348-21 1-415-477-11 1-415-700-11 1-415-654-12</td><td>-415-700-1 -415-700-1 -415-348-2 -415-700-1</td><td><fil 1-236-562-11 1-236-561-11</fil </td><td>-236-732-1 <i< td=""><td>8-759-800-81 8-759-800-81 8-759-701-78 8-759-701-75 8-752-334-78</td><td>-752-334-7</td><td>8-752-33-14 8-752-053-68 &lt;1C</td></i<></td></del<>	1-415-348-21 1-415-477-11 1-415-700-11 1-415-654-12	-415-700-1 -415-700-1 -415-348-2 -415-700-1	<fil 1-236-562-11 1-236-561-11</fil 	-236-732-1 <i< td=""><td>8-759-800-81 8-759-800-81 8-759-701-78 8-759-701-75 8-752-334-78</td><td>-752-334-7</td><td>8-752-33-14 8-752-053-68 &lt;1C</td></i<>	8-759-800-81 8-759-800-81 8-759-701-78 8-759-701-75 8-752-334-78	-752-334-7	8-752-33-14 8-752-053-68 <1C
REF. NO	C515 C516 C517 C518	C520 C520 C521 C522		CV2 CV3	CV5		003 04 04 04	200	0341 0361		01.3 01.3 01.3 01.3	01.6 01.8 01.8	FL1 FL2	FL3	22222	10341	15501
REMARK	25V 25V 25V 25V 25V	50V 16V 50V 50V	500	255V 25V 25V	255V 255V 255V	250	25V 25V 16V 16V	16V 16V 25V 25V	25V 25V 16V 16V	164	16V 16V 25V 25V	25v 16v 16v 16v 16v	16V 25V 25V 25V 25V	25V 25V 25V 25V	25V 25V 25V 25V	25V 25V	25V 25V 25V 25V
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DESCRIPTION	CERAMIC CHIP 0.1MF CERAMIC CHIP 0.1MF ELECT 100MF ELECT 100MF	ELECT 10MF CBRAMIC CHIP 0.1MF ELECT 10MF ELECT 10MF	LECT	CERAMIC CHIP O. INF CERAMIC CHIP O. INF CERAMIC CHIP O. INF	CERAMIC CHIP 0.1MF CERAMIC CHIP 0.1MF CERAMIC CHIP 0.1MF	ERAMIC CHIP 0.1	CERAMIC CHIP 0.1MF CERAMIC CHIP 0.1MF CERAMIC CHIP 0.1MF TANTAL. CHIP 1MF	TANTAL, CHIP 3.3NF TANTAL, CHIP 3.3NF TANTAL, CHIP 3.3NF CERAMIC CHIP 0.1NF	CERAMIC CHIP 0.1MF CERAMIC CHIP 0.1MF TANTAL. CHIP 1MF TANTAL. CHIP 3.3MF	AL. CHIP 3.3	TANTAL, CHIP 3.3MF TANTAL, CHIP 3.3MF CERAMIC CHIP 0.1MF CERAMIC CHIP 0.1MF	CERAMIC CHIP 0.1MF TANTAL. CHIP 1.3MF TANTAL. CHIP 3.3MF TANTAL. CHIP 3.3MF	TANTAL, CHIP 3.3MF CERAMIC CHIP 0.1MF CERAMIC CHIP 0.1MF CERAMIC CHIP 0.1MF	CHIP 0.1	ERAMIC CHIP 0:1 ERAMIC CHIP 0:1 ERAMIC CHIP 0:1 ERAMIC CHIP 0:1	ERAMIC CHIP 0.1	CERANIC CHIP 0.1NF CERANIC CHIP 0.1NF CERANIC CHIP 0.1NF CERANIC CHIP 0.1NF
PART NO.	1-163-038-91 1-163-038-91 1-124-907-11 1-124-478-11 1-163-038-91	1-124-907-11 1-163-038-91 1-124-477-11 1-124-907-11 1-124-907-11	24-907-1	1-163-038-91 1-163-038-91 1-163-038-91	1-163-038-91 1-163-038-91 1-163-038-91 1-163-038-91	53-038-9	1-163-038-91 1-163-038-91 1-163-038-91 1-135-091-00 1-135-092-21	1-135-092-21 1-135-092-21 1-135-092-21 1-163-038-91 1-163-038-91	1-163-038-91 1-163-038-91 1-135-091-00 1-135-092-21	-092	1-135-092-21 1-135-092-21 1-163-038-91 1-163-038-91 1-163-038-91	1-163-038-91 1-135-091-00 1-135-092-21 1-135-092-21 1-135-092-21	1-135-092-21 1-163-038-91 1-163-038-91 1-163-038-91 1-163-038-91	3-038	63-038-9 63-038-9 63-038-9 63-038-9	63-038-9	1-163-038-91 1-163-038-91 1-163-038-91 1-163-038-91
 REF. NO.	C88 C90 C100 C101	C102 C103 C104 C105 C105	C107 C108	C109 C110 C111	0113	CI 16	C117 C118 C119 C331 C332	C333 C334 C335 C336 C336 C337	C338 C339 C341 C342	C343	3345 345 345 345 345 345 345 345 345 345	C349 C361 C363 C363 C364	C365 C366 C368 C368 C368	C501 C503 C503	C505 C506 C507 C508	C509 C510	C511 C512 C513 C513

			1/106	1/10W 1/10W 1/10W 1/10W 1/10W	1/100 1/100 1/100 1/100 1/100	1/10w % 1/10w % 1/10w % 1/10w % 1/10w	% 1/100 1/100 % 1/100 1/100 1/100	1/100 1/100 1/100 1/100 1/100	1/10W % 1/10W % 1/10W 1/10W 1/10W	1/100 1/100 1/100 0% 1/100 1/100
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<del>22</del> 1	25C1623-L5L6 25A1226-T1E3 25C1623-L5L6 25C1623-L5L6 25C2757-T33 25C1623-L5L6 25C1633-L5L6 25C163-L5L6 2		00000	000000000000000000000000000000000000000	10K 100K 10K 100K 100	12K 470 2.7K 470 2.7K	10K 1K 3.3K 10K	100 100 100 100 100 100 100	2.2K 220 220 12K 2.7K	2.2K 100 4.7K 1K 100
NIPTION	27.08		GLAZE GLAZE GLAZE GLAZE GLAZE GLAZE	GLAZE GLAZE GLAZE GLAZE GLAZE	GLAZE GLAZE GLAZE GLAZE GLAZE	GLAZE CHIP CHIP CHIP CHIP	CHIP GLAZE CHIP GLAZE GLAZE	GLAZE GLAZE GLAZE GLAZE GLAZE	GLAZE CHIP CHIP GLAZE GLAZE	GLAZE GLAZE GLAZE GLAZE CHIP GLAZE
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	%% ****		6 L5L6 T1E3	1516 11183 11183	133 11153 1733 1733 1733	6 6 1-15 1-516 6 6	133 1516 1516 1516	-L15 -L5L6 -L5L6 	T1E3 15L6 11E3 133	1516 1516 1516 1516 1516
	2.20H 4.70H 10UH 10UH 10UH 68UH 68UH 62.20H 10UH 10UH 10UH 10UH 10UH 68UH 68UH 68UH		1162-6 11623-1516 11226-1183 2757-133	1623-1516 11623-1516 11226-11E3 1162-6	ാനലാഥ നാ	74	15 777	3624A-L15 11623-L5L6 11623-L5L6 11162-G	11226-T163 11623-L5L6 11226-T163 1226-T163	200
T10N	P) 20P P) 20P P) 20P P) 20P P) 28P P)		2SA1162-G 2SC1623-L5L 2SA1226-T1E 2SC2757-T33	2SC1623-L5L 2SC1623-L5L 2SA1226-T1E 2SA1162-G	2SC2757-T33 2SC1623-L5L 2SA1226-T1E 2SC2757-T33	2SC3624A- 2SC1623-L 2SC1623-L 2SA1162-G	R 2SC2757-1 R 2SC1623-1 R 2SC1623-1 R 2SC1623-1	2SC3624A-L1 2SC1623-L5L 2SC1623-L5L 2SA1162-G	2SA122 2SA122 2SA122 2SA122 2SC277	250162 250162 250162 250162 250162
SSCRIPTION	P) 20P P) 20P P) 20P P) 20P P) 28P P)	100	> STOR 2SA1162-G STOR 2SC1623-L5L STOR 2SA1226-T1E STOR 2SA124-T1E	STOR 2SCI623-L5L STOR 2SCI623-L5L STOR 2SAI226-TIE STOR 2SAI162-G STOR 2SAI162-G	STOR 2SC2757-T33 STOR 2SC1623-L5L STOR 2SC1726-T1E STOR 2SC2757-T33	STOR 254162-6 STOR 254162-6 STOR 25463-4 STOR 254162-6	STOR 2SC1623-1 STOR 2SC1623-1 STOR 2SC1623-1 STOR 2SC1623-1	570R 25C3624A-L1 570R 25C3623A-L1 570R 25C1623-L5L 570R 25C1623-L5L 570R 25A1162-G	STOR 2SA122 STOR 2SC162 STOR 2SA122 STOR 2SC272	STOR 2SC162 STOR 2SC162 STOR 2SC162 STOR 2SC162
DESCRIPTION	SOCKET, IC (DP) 20P  INDUCTOR CHIP 4.7UH INDUCTOR CHIP 10UH INDUCTOR CHIP 2.2UH INDUCTOR CHIP 68UH INDUCTOR CHIP 10UH INDUCTOR CHIP 10UH INDUCTOR CHIP 2.2UH INDUCTOR CHIP 2.2UH INDUCTOR CHIP 10UH INDUCTOR CHIP 10UH INDUCTOR CHIP 2.2UH INDUCTOR CHIP 10UH	7	INSISTOR> TRANSISTOR 2SA1162-G TRANSISTOR 2SC1623-L5L TRANSISTOR 2SC26-71E TRANSISTOR 2SC7267-733	TRANSISTOR 2SC1623-L5L TRANSISTOR 2SC1623-L5L TRANSISTOR 2SA126-T1E TRANSISTOR 2SA1162-G TRANSISTOR 2SA1162-G	TRANSISTOR 2SC2757-135 TRANSISTOR 2SC2757-133 TRANSISTOR 2SA1226-11E TRANSISTOR 2SA1226-11E TRANSISTOR 2SA1226-135 TRANSISTOR 2SA1226-135	TRANSISTOR 25/41/62-6 TRANSISTOR 25/3624A- TRANSISTOR 25/162-6 TRANSISTOR 25/162-6	TRANSISTOR 2SC2757-TRANSISTOR 2SC1623-L TRANSISTOR 2SC1623-L TRANSISTOR 2SC1623-L	TRANSISTOR 2SC36244-L1 TRANSISTOR 2SC1623-L5L TRANSISTOR 2SC1623-L5L TRANSISTOR 2SC1623-L5L TRANSISTOR 2SC1622-C5L TRANSISTOR 2SC1622-C5L	TRANSISTOR 25A122 TRANSISTOR 25C162 TRANSISTOR 25C17 TRANSISTOR 25C27	TRANSISTOR 25C162 TRANSISTOR 25C167 TRANSISTOR 25C167 TRANSISTOR 25C167 TRANSISTOR 25C167
DESCRI	SOCKET, IC (DP) 20P  INDUCTOR CHIP 4.7UH INDUCTOR CHIP 10UH INDUCTOR CHIP 2.2UH INDUCTOR CHIP 68UH INDUCTOR CHIP 10UH INDUCTOR CHIP 10UH INDUCTOR CHIP 2.2UH INDUCTOR CHIP 2.2UH INDUCTOR CHIP 10UH INDUCTOR CHIP 10UH INDUCTOR CHIP 2.2UH INDUCTOR CHIP 10UH	2	<pre><transistor> 216-22 TRANSISTOR 2SA1162-G 120-28 TRANSISTOR 2SC1623-L5L 103-02 TRANSISTOR 2SA126-T16-77-TRANSISTOR 2SA126-T16-77-77-13-3</transistor></pre>	120-28	22 TRANSISTOR 2SC2757-T33 28 TRANSISTOR 2SC1623-L5L 60 TRANSISTOR 2SA1226-T1E 72 TRANSISTOR 2SA1226-T1E 73 TRANSISTOR 2SA727-T33	TRANSISTOR 25/41/62-6 TRANSISTOR 25/3624A- TRANSISTOR 25/162-6 TRANSISTOR 25/162-6	TRANSISTOR 2SC2757-TRANSISTOR 2SC1623-L TRANSISTOR 2SC1623-L TRANSISTOR 2SC1623-L	TRANSISTOR 2SC36244-L1 TRANSISTOR 2SC1623-L5L TRANSISTOR 2SC1623-L5L TRANSISTOR 2SC1623-L5L TRANSISTOR 2SC1622-C5L TRANSISTOR 2SC1622-C5L	TRANSISTOR 25A122 TRANSISTOR 25C162 TRANSISTOR 25C17 TRANSISTOR 25C27	0-28 TRANSISTOR 25C162 6-22 TRANSISTOR 25C162 00-28 TRANSISTOR 25C162 00-28 TRANSISTOR 25C162 00-28 TRANSISTOR 25C162
8	1-526-656-00 SOCKET, IC (DP) 20P 1-526-656-00 SOCKET, IC (DP) 20P 1-526-656-00 SOCKET, IC (DP) 20P 1-526-656-00 SOCKET, IC (DP) 20P 1-526-656-00 SOCKET, IC (DP) 22P 1-410-196-11 INDUCTOR CHIP 2.2UH 1-410-192-51 INDUCTOR CHIP 4.7UH 1-410-196-11 INDUCTOR CHIP 4.7UH 1-410-196-11 INDUCTOR CHIP 2.2UH 1-410-470-11 INDUCTOR CHIP 10UH 1-410-470-11 INDUCTOR CHIP 10UH 1-410-204-31 INDUCTOR CHIP 10UH 1-410-206-31 INDUCTOR CHIP 10UH 1-410-206-31 INDUCTOR CHIP 2.2UH 1-410-206-31 INDUCTOR CHIP 10UH 1-410-206-31 INDUCTOR CHIP 10UH	2	RANSISTOR> 2 TRANSISTOR 2SAI162-G 8 TRANSISTOR 2SCI623-L5L 2 TRANSISTOR 2SAI226-TIE 2 TRANSISTOR 2SAI226-TIE	-729-120-28 TRANSISTOR 25CI623-L5L -729-120-28 TRANSISTOR 25CI623-L5L -729-103-02 TRANSISTOR 25A1226-T1E -729-136-22 TRANSISTOR 25A126-T -730-103-02 TRANSISTOR 25A1162-G	-729-175-72 TRANSISTOR 2SC2757-733 -729-120-28 TRANSISTOR 2SC1623-U5L -729-173-02 TRANSISTOR 2SA7226-71E -729-177-72 TRANSISTOR 2SC2757-733	729-216-22 TRANSISTOR 25AL162-67729-107-46 TRANSISTOR 25C3624A-729-120-28 TRANSISTOR 25C1623-C729-216-22 TRANSISTOR 25C1623-C729-2150-9	-729-175-72 TRANSISTOR 25C2757-7-729-120-28 TRANSISTOR 25C1623-1-729-120-28 TRANSISTOR 25C1623-1-729-120-22 TRANSISTOR 25C1623-1-729-120-28 TRANSISTOR 25C1623	-729-107-46 TRANSISTOR 25C3624A-L1 729-120-28 TRANSISTOR 25C1623-L5L -729-120-28 TRANSISTOR 25C1623-L5L -729-216-22 TRANSISTOR 25A1162-G	729-107-22 TRANSISTOR 25A127 -729-103-02 TRANSISTOR 25C162 -729-103-02 TRANSISTOR 25A122 -729-170-72 TRANSISTOR 25A127 -729-170-72 TRANSISTOR 25C277	-129-120-28 TRANSISTOR 25C162 -729-216-22 TRANSISTOR 2SC166-729-120-28 TRANSISTOR 2SC166-729-729-729-729-729-729-729-729-729-729
ART NO. DESCRI	SOCKET, IC (DP) 20P  INDUCTOR CHIP 4.7UH INDUCTOR CHIP 10UH INDUCTOR CHIP 2.2UH INDUCTOR CHIP 68UH INDUCTOR CHIP 10UH INDUCTOR CHIP 10UH INDUCTOR CHIP 2.2UH INDUCTOR CHIP 2.2UH INDUCTOR CHIP 10UH INDUCTOR CHIP 10UH INDUCTOR CHIP 2.2UH INDUCTOR CHIP 10UH	2	<pre><transistor>  729-216-22 TRANSISTOR 2SA1162-6 -729-120-28 TRANSISTOR 2SC1623-L5L -729-103-02 TRANSISTOR 2SC26-716 -729-105-02 TRANSISTOR 2SC26-718 -739-175-72 TRANSISTOR 2SC7757-33</transistor></pre>	8-729-120-28 TRANSISTOR 2SCIG23-L5L 8-729-120-28 TRANSISTOR 2SCIG23-L5L 8-729-103-02 TRANSISTOR 2SA1226-TIE 8-729-216-22 TRANSISTOR 2SA1262-G 9-730-103-02 TRANSISTOR 2SA162-G	8-729-175-72 TRANSISTOR 2SC2757-135 8-729-120-28 TRANSISTOR 2SC1623-U5L 8-729-103-02 TRANSISTOR 2SA1226-71E 8-729-175-72 TRANSISTOR 2SC2757-133 8-720-175-72 TRANSISTOR 2SC2757-133	8-729-216-22 TRANSISTOR 250-217-1 8-729-107-46 TRANSISTOR 250-248- 8-729-120-28 TRANSISTOR 250-1629-0 8-729-210-28 TRANSISTOR 250-1629-0 8-729-210-20 TRANSISTOR 250-1629-0 8-729-210-20 TRANSISTOR 250-1629-0	8-729-175-72 TRANSISTOR 2502152-7-8-729-120-28 TRANSISTOR 2501623-18-729-120-28 TRANSISTOR 2501623-	8-729-107-46 TRANSISTOR 25C3624A-L1 8-729-120-28 TRANSISTOR 25C1623-L5L 8-729-120-28 TRANSISTOR 25C1623-L5L 8-729-116-22 TRANSISTOR 25C11623-L5L 8-729-116-22 TRANSISTOR 25C1162-G	8-729-103-02 TRANSISTOR 25A125 8-729-103-02 TRANSISTOR 25C162 8-729-103-02 TRANSISTOR 25C162 8-729-173-72 TRANSISTOR 25C27	8-729-120-28 TRANSISTOR 25C162 8-729-216-22 TRANSISTOR 2SC166 8-729-120-28 TRANSISTOR 2SC166 8-729-120-28 TRANSISTOR 2SC166 8-729-120-28 TRANSISTOR 2SC166

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	5% 0.50% 5% 5%	5% 5% 0.50% 0.50%	0.50% 0.50% 0.50% 5%	200 200 200 200 200 200 200 200 200 200	0.50 0.50 0.50 0.50 0.80 0.80	20%				0.50% 0.50% 0.50% 0.50%	5% 5% 5% 5% 5% 5%	5% 5% 5% 5% 5%	5% 0.50% 0.50% 5%
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RIPTION	GLAZE CHIP CHIP GLAZE		CHIP CHIP CHIP GLAZE	GLAZE CHIP GLAZE GLAZE GLAZE	CHIP CHIP GLAZE CHIP GLAZE	GLAZE CHIP CHIP GLAZE GLAZE	GLAZE GLAZE GLAZE GLAZE GLAZE	GLAZE GLAZE GLAZE GLAZE GLAZE	GLAZE GLAZE GLAZE GLAZE GLAZE		GLAZE GLAZE CHIP GLAZE	GLAZE GLAZE GLAZE CHIP GLAZE	GLAZE CHIP CHIP GLAZE
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PART NO.	1-216-075-00 1-216-651-11 1-216-057-91	216-057-9 216-025-0 216-075-0 216-643-1 216-663-1	-216-65 -216-64 -216-65 -216-66	2216		216-057 216-635 216-635 216-025 216-075	16-025 16-075 16-025 16-075	216-025 216-049 216-075 216-075 216-075	222 222	40 400	-065-0 -049-0 -055-1 -055-0	-075-0 -025-0 -065-0 -651-1 -025-0	90 40 40 40 A
REF.NO.	R110 R111 R1113	R115 R115 R116 R117	R119 R120 R121 R122 R123	R124 R125 R126 R127	R129 R130 R131 R132	R134 R135 R136 R136 R137	R140 R140 R141 R142	R150 1 R153 1 R154 1 R157 1			R173 1 R174 1 R175 1		
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REF. NO.	R33 R35 R35 R36	R38 R39 R41 R41	R43 R44 R45 R46	R48 R50 R51 R52	R53 R55 R55 R56	R58 R60 R61 R62	R63 R64 R65 R66	R68 R69 R70 R71	R73 R74 R75 R76 R77	R78 R79 R80 R81	R83 R855 R865 R87	R88 R89 R103 R104 R105	R106 R107 R108 R109

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	PART NO.	1-163-038-91 1-163-031-11 1-163-239-11 1-163-243-11 1-163-243-11	1-124-779-00 1-124-779-00 1-216-295-00 1-216-295-00 1-163-038-91	1-163-038-91 1-163-038-91 1-163-038-91 1-163-038-91 1-163-031-11	1-163-031-11 1-163-243-11 1-163-243-11 1-124-779-00 1-124-779-00	1-216-295-00 1-216-295-00 1-163-038-91 1-163-038-91 1-163-038-91	1-163-038-91 1-163-038-91 1-163-031-11 1-163-031-11 1-126-769-21	1-126-769-21 1-126-769-21 1-126-769-21 1-126-769-21 1-126-769-21	1-126-769-21 1-126-769-21 1-126-769-21 1-126-769-21 1-126-769-21	1-126-769-21 1-126-769-21 1-126-769-21 1-126-769-21 1-126-769-21	1-126-769-21 1-126-769-21 1-126-769-21 1-163-031-11 1-163-031-11	1-163-031-11 1-163-031-11 1-163-031-11 1-163-031-11 1-163-031-11	1-163-031-11 1-163-031-11 1-163-031-11 1-163-031-11 1-163-031-11	1-163-031-11 1-163-031-11 1-163-031-11 1-163-031-11
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	REF. NO.	R192 R193 R201 R202 R203	R204 R205 R206 R207 R207	R209 R210 R211 R212 R213	R214 R215 R216 R217 R217	R219 R331 R332 R341 R342	R361 R362 R501 R502	RVI RV2 RV3	RV5 RV6 RV7 RV8	RV10 RV11 RV12	XI *****	,	# # # # #	

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	DESCRIPTION	METAL GLAZE METAL CHIP METAL GLAZE METAL GLAZE	METAL METAL METAL METAL	METAL METAL METAL METAL	METAL METAL METAL METAL METAL	METAL GLAZ METAL GLAZ METAL GLAZ METAL GLAZ METAL CHIP	METAL METAL METAL METAL	METAL GLAZ METAL GLAZ METAL GLAZ METAL CHIP	METAL GLAZ IABLE RESIS RES, ADJ,	ADJ.	****** 30ARD, ******		ELECT CERAMIC CHIP CERAMIC CHIP CERAMIC CHIP	CERAMIC CHIP CERAMIC CHIP CERAMIC CHIP ELECT CERAMIC CHIP
	PART NO.	1-216-073-00 1-216-651-11 1-216-049-00 1-216-049-00	1-216-049-00 1-216-049-00 1-216-049-00 1-216-049-00 1-216-049-00	1-216-049-00 1-216-049-00 1-216-049-00 1-216-049-00	1-216-033-00 1-216-033-00 1-216-023-00 1-216-023-00 1-216-049-00	1-216-067-91 1-216-064-00 1-216-013-00 1-216-624-11	1-216-624-11 1-216-624-11 1-216-073-00 1-216-073-00 1-216-073-00	1-216-295-00 1-216-295-00 1-216-699-11 1-218-753-11	1-216-295-00 <vari 1-237-517-21</vari 	-23(-51(-21   SW    1-570-857-11	** ** ** ** ** ** ** ** ** ** ** ** **	.4-353-708-00 <cad< th=""><th>1-124-779-00 1-163-113-00 1-163-362-11 1-163-088-00</th><th>1-163-117-00 1-163-038-91 1-163-038-91 1-126-204-11 1-163-038-91</th></cad<>	1-124-779-00 1-163-113-00 1-163-362-11 1-163-088-00	1-163-117-00 1-163-038-91 1-163-038-91 1-126-204-11 1-163-038-91
	REF. NO.	R204 R205 R207 R209	R211 R211 R212 R213 R214	R215 R216 R217 R218	R220 R220 R221 R223 R223	R225 R226 R227 R227 R228	R231 R232 R233 R233	R238 R238 R239 R240	RV101	KV201	** ** ** **		3535	66 63 621 621
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PART NO.	1-126-204-11 1-135-091-00 1-135-091-00 1-153-001-00	1-163-243-11 1-163-243-11 1-163-038-91 1-163-038-91	1-126-204-11 1-135-091-00 1-126-204-11	*1-563-018-11 *1-566-044-11 *1-566-044-11	<tr1 1-141-260-00</tr1 	< 8-719-104-34 8-719-104-34 8-719-104-34 8-719-104-34	8-719-104-34 8-719-400-18 8-719-400-18 8-719-400-18 8-719-400-18	8-719-104-34 8-719-104-34 8-719-105-91 8-719-104-34	<feh 1-535-178-11 1-535-178-11</feh 	<15.00	8-759-918-33 8-759-918-33 8-759-918-33 8-759-300-71 8-759-701-75	8-759-420-96 8-759-603-24 8-759-420-96 8-759-603-24 8-759-420-96	<0117> 1-410-212-51 II
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ESCRIPTION	CHIP CHIP GLAZE	GLAZE GLAZE GLAZE GLAZE GLAZE CHIP	CHIP GLAZE GLAZE GLAZE GLAZE	GLAZE GLAZE GLAZE GLAZE GLAZE	CHIP CHIP CHIP CHIP GLAZE	GLAZE GLAZE GLAZE GLAZE GLAZE CHIP	CHIP GLAZE GLAZE GLAZE GLAZE	GLAZE GLAZE GLAZE GLAZE GLAZE	CHIP CHIP CHIP CHIP GLAZE	GLAZE GLAZE GLAZE GLAZE CHIP	CHIP GLAZE GLAZE CHIP CHIP	GLAZE GLAZE GLAZE GLAZE GLAZE	GLAZE GLAZE GLAZE GLAZE GLAZE	7475
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PART NO.	1-216-643-11 1-216-624-11 1-216-025-00	1-216-073-00 1-216-025-00 1-216-073-00 1-216-065-00 1-216-639-11	1-216-639-11 1-216-025-00 1-216-065-00 1-216-057-91 1-216-057-91	1-216-057-91 1-216-057-91 1-216-065-00 1-216-097-00 1-216-025-00	1-216-667-11 1-216-667-11 1-216-643-11 1-216-624-11 1-216-025-00	1-216-073-00 1-216-025-00 1-216-073-00 1-216-065-00 1-216-639-11	1-216-639-11 1-216-025-00 1-216-065-00 1-216-057-91 1-216-057-91	1-216-057-91 1-216-057-91 1-216-065-00 1-216-097-00 1-216-025-00	1-216-667-11 1-216-667-11 1-216-643-11 1-216-624-11 1-216-049-00	1-216-073-00 1-216-025-00 1-216-073-00 1-216-065-00 1-216-659-11	1-216-639-11 1-216-025-00 1-216-073-00 1-216-651-11 1-216-651-11	1-216-049-00 1-216-075-00 1-216-051-00 1-216-019-00 1-216-055-00	1-216-065-00 1-216-025-00 1-216-065-00 1-216-097-00	20
REF. NO.	R103 R104 R111	R112 R113 R114 R115	R117 R118 R119 R120 R121	R122 R123 R124 R125 R125	R201 R202 R203 R204 R211	R212 R213 R214 R215 R215	R217 R218 R219 R220 R221	R222 R223 R224 R225 R225	R301 R302 R303 R304 R311	R312 R313 R314 R315 R315	R317 R318 R319 R320 R321	R322 R323 R324 R325 R325	R327 R328 R329 R330	<u></u>
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PART NO.	1-410-946-31	1-239-075-11 1-239-075-11 1-239-076-11	CTRA 8-729-120-28 8-729-216-22 8-729-175-72	-729-901 -729-901 -729-901 -729-901	-729-901-0 -729-216-2 -729-901-0 -729-120-2	8-729-216-22 8-729-216-22 8-729-216-22 8-729-107-46 8-729-120-28	1222	-729-175 -729-175 -729-175 -729-175	-216-097	216-051 216-097 216-025 216-065 216-051	70000	216 216 216 216	216-069 216-061 216-065 216-065 216-667	1-216-667-11
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Les composants identifies par une trame et une marque. A sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

The components identified by shading and mark ♠ are critical for safety. Replace only with part number specified.

REMARK REF. NO.

TSL STRACAL PARTS LIST

DESCRIPTION	1C MB4027B 1C MC14093BCP 1C MC14093BCP 1C CX-158 1C TL082ACP 1C TL082ACP 1C MC1496P 1C NJM2903D 1C TL082ACP 1C MC1496BCP 1C MC1496BCP 1C MC1406BCP 1	0 INDUCTOR 10MMH  RANSISTOR> 9 TRANSISTOR DTC144ES 8 TRANSISTOR 2SC2785-HFE 9 TRANSISTOR 2SC2785-HFE 10 TRANSISTOR 2SC2785-HFE 10 TRANSISTOR 2SC2785-HFE	RANSISTOR 25C2785-HF RANSISTOR 25C2785-HF RANSISTOR 25C2785-HF RANSISTOR 25C2785-HF RANSISTOR 25C2785-HF RANSISTOR DTC144ES RANSISTOR DTC144ES RANSISTOR DTC144ES RANSISTOR DTC144ES RANSISTOR DTC144ES RANSISTOR DTC144ES	TRANSISTOR DTC144E TRANSISTOR 2SC2785 TRANSISTOR 2SC2785 TRANSISTOR 2SC2785 TRANSISTOR 2SC2785 TRANSISTOR 2SC2785 TRANSISTOR DTC144E TRANSISTOR DTC144E TRANSISTOR DTC144E
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PART NO.	1-161-051-00 1-126-157-11 1-126-157-11 1-130-871-11 1-130-871-11 1-130-871-11 1-130-871-11 1-161-051-00 1-130-871-11 1-161-051-00 1-126-163-11 1-126-157-11 1-136-165-00 1-136-165-00	\$\begin{align*} \begin{align*} \begi	-719-110 -719-911 -719-9110 -719-110 -719-110 -719-110 -719-9111	8-719-911-19 8-719-911-19 8-719-911-19 CCDN *1-566-060-11 *1-566-056-11 *1-566-058-11 *1-566-058-11 *1-566-058-11
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DESCRIPTION	CARBON CARBON CARBON	CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON	CARBON CARBON METAL CARBON CARBON	CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON METAL METAL	METAL METAL CARBON CARBON CARBON CARBON		
PART NO.	1-249-433-11 1-249-433-11 1-247-903-00	425-1 423-1 423-1 429-1	-249-433-1 -249-439-1 -249-421-1 -249-435-1 -249-429-1			49-455 49-393 47-848 49-417 49-429	1-249-435-11 1-249-409-11 1-249-405-11 1-249-417-11 1-249-405-11	249-430-1 249-424-1 247-800-1 249-417-1	222 242	49-4 49-4 49-4 49-4 15-4	-43 -41 -42 -42	-445 -445 -461	1-249-427-11 1-249-429-11 1-249-405-11
REF. NO.	R65 R67 R68	R70 R71 R72 R74	R76 R77 R80 R81	R R R R R R R R R R R R R R R R R R R	R88 R89 R90 R91	R93 R94 R95 R95	R97 R98 R100 R101	R102 R103 R104 R105	R107 R109 R1110 R1111	TT TT77	32222	R131 R132 R133	R135 R136 R137
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PART NO.	1-215-461-00 1-249-417-11 1-249-430-11 1-249-417-11 1-249-422-11	1-247-840-00 1-215-462-00 1-249-417-11 1-249-417-11 1-249-423-11	1-249-419-11 1-249-429-11 1-249-424-11 1-249-419-11 1-249-410-11	1-249-417-11 1-215-427-00 1-215-435-00 1-215-443-00 1-249-400-11	1-249-429-11 1-215-445-00 1-249-429-11 1-249-393-11	1-215-439-00 1-249-429-11 1-215-421-00 1-215-458-00 1-249-429-11	1-249-427-11 1-249-393-11 1-249-425-11 1-249-424-11 1-247-800-11	1-249-417-11 1-249-417-11 1-249-417-11 1-249-417-11 1-249-417-11		000000	429-1 417-1 903-0 421-1 417-1	1-249-429-11 1-249-423-11 1-249-429-11 1-215-445-00	1-249-429-11 1-249-427-11 1-249-393-11 1-249-429-11
EF.NO.	H 260 470	R6 - R7 R8 R9 R10	RR111 RR132 R154	R16 R17 R18 R19 R20	R21 R22 R23 R23 R25	R26 R27 R28 R30	R31 R32 R33 R34 R35	R36 R37 R38 R39	8841 8842 8443 845	R46 R47 R48 R49 R50	R51 R52 R53 R55 R55	R57 R58 R60	R61 R62 R63 R64

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	ا د	-437-11 -417-11 -433-11	29-11 29-11 39-11 28-11	33-11 33-11 33-11 43-00 05-00 31-00	419-11 455-00 445-00	21-21 22-21 21-21 21-21 19-21	18 - 21 18 - 21 19 - 21 19 - 21	19-21 19-21 19-21 19-21	17-21 19-21 19-21 19-21	16-21 16-21 16-21 19-21 19-21	5519-21 5519-21 5519-21	-516-21  -908-11	***** 981-A	25-03 <cap< td=""></cap<>
	PART NO	1-249-437-11 1-249-417-11 1-249-433-11 1-249-437-11	1-249-429-11 1-249-429-11 1-249-429-11 1-249-439-11	1-249-433-11 1-249-433-11 1-215-443-00 1-215-405-00 1-215-431-00	-249-4 -215-4 -215-4	74A 1-237-521-21 1-237-522-21 1-237-519-21 1-237-519-21	1-237-51 1-237-51 1-237-51 1-237-51	-237-51 -237-51 -237-51 -237-51	ப ஸ்ஸ்ஸ்ஸ்	-237-516-21 -237-516-21 -237-519-21 -237-519-21 -237-519-21	-237-5 -237-5 -237-5 -237-5	57.1	**************************************	40-627-819-6
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REF.NO.	£2555 555 555 555 555 555 555 555 555 55	C11 C11 C12 C12	C13 C14 C15 C16 C17	C18 C19 C20 C21 C22	C23 C24 C25 C26 C27		33 33 34 37 37	338 541 542 541	C43 C45 C45 C47	C48 C49 C50 C51 C52	C53 C54 C55 C57	C58 C59 C61 C61	C63 C65 C65 C65

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	REF. NO.	RV29 RV30 RV31 RV32	RV33 RV41 RV42	RV43 RV44 RV45 RV46	RV48 RV49 RV50	RV52 RV52 RV53	RV54 RV55 RV56 RV57	RV58 RV59	RV61 *****				22828	CC CC C10 C120	C128 C128 C128	22223 22223 22233	C24 C25 C26 C27	C29 C30 C31
	REMARK																	
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	ESCRIPTION	47K 0.50% 47K 0.50% 82K 0.50% 47K 0.50% 47K 0.50%	11-11 METAL CHIP 47K 0.50% 1/ 15-11 METAL CHIP 1.5K 0.50% 1/ 19-91 METAL GLAZE 47K 5% 1/	METAL CHIP 22K 0.50% IV METAL CHIP 39K 0.50% IV METAL CHIP 39K 0.50% IV METAL CHIP 10W 0.50% IV	-91 METAL CHIP 10K 0.50% 1/ -11 METAL CHIP 22K 0.50% 1/ -11 METAL CHIP 22K 0.50% 1/	P 22K 0.50% 1/V 1/V 0.50%	METAL CHIP 22K 0.50% I/ METAL CHIP 22K 0.50% I/ METAL CHIP 10K 0.50% I/	P 47K 0.50% 17 47K 0.50% 17 P 56K 0.50% 17	P 47K 0.50% 1/ P 47K 0.50% 1/ P 47K 0.50% 1/	METAL CHIP 47K 0.50% 17 METAL CHIP 56K 0.50% 17	P 47K 0.50% 1/ P 47K 0.50% 1/ P 15K 0.50% 1/	RESI	CERMET 10K (V. CERMET	CERMET 10K (V. CONV.	CERMET 10K (V. CERMET	CERMET 10K (H.	ES, ADJ, CERMET 10K (H.CONV.	ES, ADJ, CERMET 10K (H. ES, ADJ, CERMET 10K (H. ES, ADJ, CERMET 10K (H.
	NO. DESCRIPTION	11 NETAL CHIP 47K 0.50% 1-11 METAL CHIP 47K 0.50% 17-11 METAL CHIP 82K 0.50% 11-11 METAL CHIP 47K 0.50% 11-11 METAL CHIP 47K 0.50%	1-216-691-11 METAL CHIP 47K 0.50% 1/ 1-216-655-11 METAL CHIP 1.5K 0.50% 1/ 1-216-089-91 METAL GLAZE 47K 5% 1/	1-216-683-11 METAL CHIP 22K 0.50% 1/ 1-216-689-11 METAL CHIP 39K 0.50% 1/ 1-216-689-11 METAL CHIP 39K 0.50% 1/ 1-216-675-91 METAL CHIP 10W 0.50% 1/	1-216-675-91 METAL CHIP 10K 0.50% 1/ 1-216-683-11 METAL CHIP 22K 0.50% 1/ 1-216-683-11 METAL CHIP 22K 0.50% 1/		1-216-683-11 METAL CHIP 22X 0.50% 1/ 1-216-683-11 METAL CHIP 22X 0.50% 1/ 1-216-675-91 METAL CHIP 10K 0.50% 1/	METAL CHIP 47K 0.50% I/ METAL CHIP 47K 0.50% I/ METAL CHIP 56K 0.50% I/	METAL CHIP 47K 0.50% 1/ METAL CHIP 47K 0.50% 1/ METAL CHIP 47K 0.50% 1/	1-216-691-11 NETAL CHIP 47K 0.50% 1/ 1-216-693-11 NETAL CHIP 56K 0.50% 1/	METAL CHIP 47K 0.50% 1/ METAL CHIP 47K 0.50% 1/ METAL CHIP 15K 0.50% 1/	ABLE RESI	RES, ADJ, CERNET 10K (V.	RES, ADJ, CERMET 10K (V.CONV.	1-228-459-00 RES, ADJ, CERNET 10K (V. 1-228-459-00 RES), ADJ, CE	RES, ADJ, CERNET 10K (H.	459-00 RES, ADJ, CERMET 10K (H.CONV.	459-00 RES, ADJ, CERMET 10K (H. 459-00 RES, ADJ, CERMET 10K (H. 459-00 RES, ADJ, CERMET 10K (H.

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PART NO.	1-249-429-11	1-249-429-11 1-249-421-11 1-247-873-31 1-249-429-11 1-216-433-00	1-216-350-11 1-216-350-11 1-249-417-11 1-215-887-00 1-249-429-11	1-249-417-11 1-215-445-00 1-215-445-00 1-215-431-00 1-215-431-00	1-249-435-11 1-215-461-00 1-249-429-11 1-249-429-11 1-247-868-11	1-249-429-11 1-249-427-11 1-215-433-00 1-215-435-00 1-249-429-11	1-249-441-11 1-249-441-11 1-215-469-91 1-249-429-11 1-249-429-11	1-215-876-00 1-215-859-00 1-216-349-00 1-249-417-11 1-249-417-11	1-216-463-00 1-216-346-00 1-249-382-11 1-247-826-00 1-247-826-00	1-215-445-00 1-215-445-00 1-215-447-00 1-249-391-11 1-215-445-00	1-215-445-00 1-249-405-11 1-249-419-11 1-249-419-11	1-215-907-11 1-215-907-11 1-216-361-00	<tra< td=""><td>1-460-06/-11 1-407-850-00 1-437-078-00 1-437-079-00 1-439-383-11</td><td></td></tra<>	1-460-06/-11 1-407-850-00 1-437-078-00 1-437-079-00 1-439-383-11	
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DESCRIPTION	FILM 0.0044MP ELECT 33MP ELECT 33MP	ELECT ELECT CERAMIC CERAMIC	CERAMIC 220PF CERAMIC 100PF DE>	DIODE RD12ES DIODE 1SS119 DIODE 1SS119 DIODE 1SS119 DIODE RD7.5E	D10DE RH-1A D10DE ERD28-08: D10DE RH-1A D10DE RH-1A D10DE RH-1A	D10DE RD4.3ESB2 D10DE RD4.3ESB2 D10DE 1SS119 D10DE 1SS119	MINIATURE DY)	IC UPC1394C IC NJK4558D	COLL, CHOKE 100UH COLL, CHOKE 100UH CARBON 3.3 5% CARBON GOLL, DRAM CORE (CDI)	NSISTOR>. TRANSISTOR	TRANSISTOR TRANSISTOR TRANSISTOR	TRANSISTOR TRANSISTOR TRANSISTOR TRANSISTOR	TRANSISTOR 2SD1134-C TRANSISTOR 2SB858-C	STOR> CARBON 1.2K 5%	4 (K 5% 10K 5%
PART NO. DESCRIPTION	*555	-11 ELECT -11 ELECT -00 CERAMIC -11 CERAMIC	CERAMIC 220PF CERAMIC 100PF DE>	ODE RD12ES ODE 1SS119 ODE 1SS119 ODE 1SS119 ODE RD7.5E	RH-1A ERD28-08: RH-1A RH-1A RH-1A	100E RD4.3ESB 100E RD4.3ESB 100E 1SS119 100E 1SS119	R> (MINIATURE DY)	222 2	JIL, CHOKE 100UH JIL, CHOKE 100UH RBON 3.3 5% JIL, DRAM CORE (CDI)	NSISTOR>. TRANSISTOR	729-177-43 TRANSISTOR -729-303-61 TRANSISTOR -729-304-07 TRANSISTOR	38888	STOR 2SD113 STOR 2SB858	N 1.2K 5%	CARBON 4.7K 5%

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DESCRIPTION	******** EB BOARD	+	INSULATOR Insulator	7085	BLECT BLECT BLECT BLECT FILM	MYLAR BLECT MYLAR BLECT	Ωį	FILM ELECT FILM ELECT	BLECT BLECT BLECT	CERAMIC FILM CERAMIC	CRAMIC TRAMIC	998	0100E		388 8		COIL, 1	<transistor></transistor>	FRANSI STOR FRANSI STOR FRANSI STOR	RANSI	RANSI RANSI RANSI RANSI
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NO.	***		73-965-01 73-966-01	γ	1-124-666-11 1-126-966-11 1-124-903-11 1-124-357-11 1-130-789-00	-106-375-12 -123-269-00 -130-479-00 -124-122-11	122-1	1-136-161-00 1-124-915-11 1-136-167-00 1-124-046-00	1-124-808-51 1-124-122-11 1-124-122-11	1-162-129-00 1-136-173-00 1-102-959-00	0-088 (>	911-1	4400	ه است است		Ş	9-123-00	₽	3-729-697-92 3-729-140-96 3-729-255-12	208-7	3-729-208-38 8-729-386-12 3-729-255-12 8-729-697-92 8-729-140-96
PART N	*****		333		-124 -124 -124 -130	-106- -123- -130- -124-	-124-	-136- -136- -136-	-124- -124-	-162- -136- -102-	-101-	-719-	-719- -719- -719-	-719-	8-719-911- 8-719-911- 8-719-911- 8-719-911-		-459-		-729- -729- -729-	-729-	-729- -729- -729- -729-
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REF. NO.	# # #				22822	15333	C12	C154	C13 C13 C19		53	01	024 024 024	02	08 09 010 021				3225	25	46 47 48 49 410

Les composants identifies par une trame et une marque. A sont orifiques pour la securite.
Neles remplacer que par une piece portant le numero specifie.

The components identified by shading and mark  $\Delta$  are critical for safety.

Replace only with part number specified.

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REMARK	25V 50V 50V 50V 50V	500V 500V 16V 2KV	16V 50V 50V 16V 50V	50V 50V 50V 50V 16V	400V 25V 50V 50V 500V	500V 500V 350V	500V 500V 500V	160V 500V 200V 160V	400V 400V 400V 400V 250V	250V 250V 250V 125V 400V	400V 400V 400V 125V 50V	500 500 500 500 500	500 5000 5000
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DESCRIPTION	BLECT FILM FILM FILM ELECT	CERANIC FILM FILM ELECT CERANIC	ELECT FILM FILM ELECT CERAMIC	CERAMI C CERAMI C CERAMI C CERAMI C ELECT	FILM BLECT BLECT FILM CERAMIC	CERAMIC CERAMIC CERAMIC ELECT		ELECT CERAMIC BLECT ELECT	ELECT CERAMIC CERAMIC CERAMIC CERAMIC	ELECT ELECT ELECT CERAMIC CERAMIC	CERANI C CERANI C CERANI C FILM	FILM CERAMIC FILM CERAMIC	FILM CERAMIC CERAMIC
. PART NO.	1-126-967-11 1-130-734-00 1-136-165-00 1-136-165-00 1-123-381-00	1-102-038-00 1-136-165-00 1-136-165-00 1-126-964-11 1-162-132-00	1-126-964-11 1-136-173-00 1-136-173-00 1-126-964-11 1-101-006-00	1-101-006-00 1-101-006-00 1-101-006-00 1-101-006-00 1-126-964-11	1-136-201-11 1-124-915-11 1-124-902-00 1-130-734-00 1-102-228-00	1-102-228-00 1-102-228-00 1-102-228-00 1-124-024-00	1-162-117-00 1-162-117-00 1-162-117-00 1-124-562-11	1-124-171-00 1-162-117-00 1-124-562-11 1-124-171-00 1-124-171-00	1-124-122-11 1-161-953-52 1-161-953-52 1-162-599-12 1-162-599-12		\$\hat{\hat{A}_1+162-578-51}\$\hat{\hat{A}_1+162-578-51}\$\hat{A}_1+162-578-51\$\$\hat{A}_1-136-311-51\$\$\hat{A}_1-136-171-00\$\$	1-136-171-00 1-102-038-00 1-136-173-00 1-102-050-00 1-136-173-00	1-136-173-00 1-102-050-00 1-162-117-00
REF.NO.	C38 C38 C40	C41 C42 C43 C43 C45 C45	C46 C48 C48 C49 C50	551 552 553 653 654 655	C56 C53 C59 C60	263 263 264 264 264 274	767 768 768 768 769	C70 C72 C73 C73	C75 C77 C79 C79 C79 C79	C81 C83 C84 C84 C84 C84 C84 C84 C84 C84 C84 C84	5 2 2 2 2 3 2 3 3 3 3 3 3 3 3 3 3 3 3 3	C92 C94 C95 C96 C97	C98 C99 C100
REMARK	0NLY)					350V	350V 500V 500V 500V	500V 25V 25V 25V 25V	255V 255V 16V 16V	200V 5000V 5000V	2000 2000 2000 2000 2000	250 250 500v	200 200 200 200 200
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NOIJ	# ET # ET # ET #	0ARD	SELECTOR POWER VOLTAGE INLET 3P HOLDER (A), PLUG BAND, BINDING HRAT SINY (TR)	SELECT  I), POLISHING  (G3)  E  C3)	POWER INK (S.R.T) S.R.T) FUSE HOLDER	4.7MF	4.7MF 100PF 100PF 100PF	100PF 470MF 1000MF 470MF 1000MF	470NF 2200MF 470MF 2200MF 1000MF	0.022MF 0.1MF 330PF 100PF 0.001MF	1002MF 0.1MF 1MF 1MF 150PF	10MF 47MF 100PF 330PF	150PF 150PF 1MF
DESCRIPTION	######################################	######################################		COVER, AC. SELECT SPACER (G1), POLIS INSULATOR (G3) NUT, PLATE SPACER (G2)	PANEL, HEAT S BAND ( COVER,	ACITOR> BLECT	ELECT CERAMI CERAMI CERAMI	CERAMIC BLECT BLECT BLECT BLECT	E ECT ELECT	MYLAR MYLAR CERAMIC CERAMIC CERAMIC	CERAMIC MYLAR ELECT CERAMIC	ELECT ELECT CERAMIC CERAMIC	CERAMIC CERAMIC ELECT
), PART NO.	**************************************	1-533-167-21 1-533-168-21 1-535-316-11	A.1-570-173-22 A.1-580-375-11 2-990-241-02 *3-337-402-01 *4-347-706-00	*4-371-879-02 4-379-403-01 *4-379-408-01 *4-379-409-01 4-379-410-01	*4-379-430-01 *4-386-847-01 *4-386-848-01 *4-593-031-01 *4-601-466-11	<pre><cap 1-124-024-00</cap </pre>	1-124-024-00 1-162-117-00 1-162-117-00 1-162-117-00	1-162-117-00  -126-104-11  -126-105-11  -126-104-11  -126-105-11	1-126-104-11 1-124-602-00 1-126-104-11 1-124-602-00 1-124-360-00	1-106-375-12 1-108-638-11 1-102-030-00 1-162-117-00 1-102-038-00	1-106-375-12 1-108-375-12 1-124-903-11 1-101-361-00 1-101-361-00	1-126-964-11 1-126-967-11 1-162-117-00 1-102-030-00 1-124-903-11	1-101-361-00 1-101-361-00 1-124-903-11
REF. NO.	# # # #		7				2525	- - - - - - - - - - - - - - - - - - -	C C C C C C C C C C C C C C C C C C C	CC	223 224 226 227 237	33 33 33 33 33 33 33 33 33 33 33 33 33 3	033 034 035

TELECTRICAL PARTS LIST

△および ‱── 印の部品は,安全性を維持するために,重要な部品です。従って交換時は,必ず指定の部品を使用して下さい。

Les composants identifies par une trame et une marque A sont critiques pour la securite.	Ne les remplacer que par une piece portant le numero specífie.
The components identified by shading and mark $\Delta$ are critical tor safety.	Replace only with part number specified.

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				2811/3011	BVM-3011P 2811/3011 BVM-3011P								16 16 1/46	333	1/48	1/40 1/40 20 1/40	#5 / T	1/46	1/40	1/46	1/46		
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	RT NO.	-459-645-11 -421-329-00 -421-329-00 -421-329-00	1-421-329-00	75.44 SEE	-590-11 -937-11	<trans< th=""><th>29-301-76 29-301-76</th><th>29-140-96 29-140-96 29-140-96</th><th>29-140-96 29-140-97 29-119-78</th><th>29-119-78 29-119-76</th><th>29-140-96 29-119-78</th><th><pre></pre></th><th>1-215-857-11 M 1-215-857-11 M 1-247-715-11 C</th><th></th><th>249-447-11 C 247-692-11 C 249-418-11 C 249-382-11 C</th><th></th><th><b>-</b> - :</th><th>1-247-709-11</th><th>1-249-417-11 C 1-249-409-11 C 1-249-417-11 C</th><th></th><th>1-247-713-11 C 1-247-713-11 C 1-247-700-11 C</th><th>`</th><th></th></trans<>	29-301-76 29-301-76	29-140-96 29-140-96 29-140-96	29-140-96 29-140-97 29-119-78	29-119-78 29-119-76	29-140-96 29-119-78	<pre></pre>	1-215-857-11 M 1-215-857-11 M 1-247-715-11 C		249-447-11 C 247-692-11 C 249-418-11 C 249-382-11 C		<b>-</b> - :	1-247-709-11	1-249-417-11 C 1-249-409-11 C 1-249-417-11 C		1-247-713-11 C 1-247-713-11 C 1-247-700-11 C	`	
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	PTION	100PF 0.01MF 0.01MF 47MF		ESAC25-04C ESAC25-04N ESAD25-04D SSAD25-04D 010SC6MR	D10SC6M RU-3AM CTU-38R CTU-38S ESAC25-04C	C25-04N 119	119 3EB3 119	SS119 SS119 08-2		119 )EB3 119	CR3CM-8 31-004	ERB81-004 ERB81-004 ERB81-004	SAK SAK	a O L	CCTOR (SWN PIT CCTOR (SWN PIT CCTOR 3P	ICTOR 3P		7-5.0		E 525UH E 525UH E 525UH		±を維持する 交換時は、必	
	DESCRIPT	CERAMIC FILM FILM ELECT	^	000E	00E	ODE ESA ODE 15S	DIODE ROIDEB3 DIODE ROIDEB3 DIODE ISSII9	100E 1	1008 RB40 C UPC574	DIGDE 155119 DIGDE RD10EB3 DIGDE 155119	HYRISTOR TODE ERB	100E	TODE RU-	TOR M	żżżż	IN, CONNECIN, CONNEC		C AC5433 C TL494CN C TL494CN C TL494CN	. 10	COIL, CHOKE COIL, CHOKE COIL, CHOKE		製い	,
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	REF.NO. PART NO.	-162-117-00 -136-601-11 -136-601-11 -124-477-11	30010>	8-719-912-51 DI 8-719-918-73 DI 8-719-901-73 DI 8-719-901-73 DI 8-719-988-31 DI	-719-510-09 D1 -719-300-33 D1 -719-300-52 D1 -719-300-53 D1 -719-912-51 D1	8-719-918-73	8-719-911-19 8-719-100-58 8-719-911-19	8-719-911-19 D 8-719-911-19 D 8-719-200-02	A. 8-719-300-07 8-759-157-40	8-719-911-19 8-719-100-58 8-719-911-19	8-719-003-08 8-719-982-04	8-719-982-04 8-719-982-04 8-719-982-04	8-719-300-33	<conv< td=""><td>1999</td><td>*!-566-055-11 P *!-566-058-11 P *!-566-057-11 P 1-566-054-11 P</td><td>&lt;01&gt;</td><td>1166°C</td><td><c011 1-459-643-11</c011 </td><td>459-643-11 459-643-11 459-643-11</td><td>1-459-207-00 1-459-644-11</td><td> ※ 票 罷</td><td></td></conv<>	1999	*!-566-055-11 P *!-566-058-11 P *!-566-057-11 P 1-566-054-11 P	<01>	1166°C	<c011 1-459-643-11</c011 	459-643-11 459-643-11 459-643-11	1-459-207-00 1-459-644-11	※ 票 罷	

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Les composants identifies par une trame et une marque A sont critiques pour la securite.  Ne les remplacer que par une portant le numero specifie.	.NO. PART NO. DESCR	BYI AXI-515-805-11 RELAY, POWER <pre></pre>	T1	TG A.1-447-106-11 TRANSFORMER, DRIVE T7 A.1-421-524-12 TRANSFORMER, CURRENT <therristor></therristor>	THI & 1-800-820-12 THERMISTOR, POWER. THPI & 1-806-387-12 THERMISTOR (POSITIVE) THP2 & 1-800-686-33 THERMISTOR (POSITIVE)	*1-627-679-11 GB BOARD  ******* <capacitor></capacitor>	C1 1-124-903-11 ELECT 1MF 20% 50V C2 1-124-903-11 ELECT 1MF 20% 50V <d10de></d10de>	D1 8-719-911-19 DIODE ISS119 D2 8-719-110-08 DIODE RD8.2ESB2 D3 8-719-911-19 DIODE ISS119 D4 8-719-911-19 DIODE ISS119 D5 8-719-911-19 DIODE ISS119	D6 8-719-110-08 D10DE RD8.2ESB2 D7 8-719-812-41 D10DE TLR124 D8 8-719-911-19 D10DE 1SS119 D9 8-719-911-19 D10DE 1SS119 D10 8-719-812-41 D10DE TLR124	D11 8-719-110-08 D10DE RD8.2ESB2 D12 8-719-911-19 D10DE ISS119 D13 8-719-911-19 D10DE ISS119 D14 8-719-911-19 D10DE ISS119 D15 8-719-911-19 D10DE ISS119	D16 8-719-911-19 D10DE 1SS119 D17 8-719-110-08 D10DE R08.2ESB2 D18 8-719-911-19 D10DE 1SS119 D19 8-719-911-19 D10DE ISS119	JNNEC I PI	<transistor></transistor>	Q1 8-729-119-76 TRANSISTOR 2SA1175-HFE Q2 8-729-119-78 TRANSISTOR 2SC2785-HFE Q3 8-729-119-76 TRANSISTOR 2SA1175-HFE Q4 8-729-119-78 TRANSISTOR 2SC2785-HFE Q5 8-729-119-76 TRANSISTOR 2SA1175-HFE	8-729-119-76 TRANSISTOR 8-729-119-76 TRANSISTOR 8-729-119-78 TRANSISTOR
The components identified by <b>A</b> in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.  Should replacement be required, replace only with the value originally used.	REF.NO. PART NO. DESCRIPTION REMARK 'R	R30 1-215-886-11 METAL OXIDE 100 5% 2W F R31 1-215-886-11 METAL OXIDE 100 5% 2W F R32 1-215-886-11 METAL OXIDE 100 5% 2W F R33 1-247-697-11 CARBON 56 5% 1/4W F R34 1-247-697-11 CARBON 56 5% 1/4W F	1-249-425-11 CARBON 4.7K 5% 1-249-420-11 CARBON 1.8K 5% 1-249-429-11 CARBON 10K 5% 1-249-413-11 CARBON 470 5% 1-215-453-00 METAL 22K 1%	R41 1-249-425-11 CARBON 4.7K 5% 1/4W R42 1-215-437-91 METAL 4.7K 1% 1/4W R43 1-215-435-00 METAL 3.9K 1% 1/4W R44 1-215-427-00 METAL 1.8K 1% 1/4W R47 1-216-995-11 METAL 820 1% 10W	R48 1-215-866-11 METAL OXIDE 330 5% 1W F METAL OXIDE 330 5% 1W F METAL OXIDE 33K 5% 2W F R54 1-215-901-00 METAL OXIDE 33K 5% 2W F R55 1-215-426-00 METAL OXIDE 1.6K 1% 1/4W	R60     1-249-420-11     CARBON     1.8K     5%     1/4W       R61     1-249-420-11     CARBON     1.8K     5%     1/4W       R62     1-249-420-11     CARBON     10K     5%     1/4W       R64     1-249-426-11     CARBON     5.6K     5%     1/4W       R65     1-215-437-91     METAL     4.7K     1%     1/4W	44	R78 1-215-433-00 METAL 3.3K 1% 1/4W R80 A.1=202-643-35 SOLID 820K 10% 1/2W R81 1-215-461-00 METAL 47K 1% 1/4W R82 1-215-461-00 METAL 47K 1% 1/4W R83 1-215-461-00 METAL 47K 1% 1/4W	R84 1-215-459-00 METAL 39K 1% 1/4W R85 1-215-449-00 METAL 15K 1% 1/4W R86 1-215-437-91 METAL 4.7K 1% 1/4W R87 1-249-405-11 CARBON 22K 5% 1/4W R88 1-249-453-11 CARBON 22K 5% 1/4W	R89 1-249-429-11 CARBON 10K 5% 1/4W R90 1-249-429-11 CARBON 10K 5% 1/4W R91 1-249-429-11 CARBON 10K 5% 1/4W R92 A-1-217-295-11 GIREWOUND 5.6 10% 5W R R93 1-215-886-11 WETAL OXIDE 100 5% 2W R	R94 1-205-538-00 WIREWOUND 4.7 10% 10W R95 1-215-904-11 METAL OXIDE 100K 5% 2W F R96 1-215-904-11 METAL OXIDE 100K 5% 2W F R97 1-215-904-11 METAL OXIDE 100K 5% 2W F R98 1-215-904-11 METAL OXIDE 100K 5% 2W F	R100 1-212-889-00 FUSIBLE 220 5% 1/4W F R101 1-249-470-11 CARBON 0.47 5% 1/2W F R102 1-249-470-11 CARBON 0.47 5% 1/2W F R103 1-249-470-11 CARBON 0.47 5% 1/2W F R104 1-249-377-11 CARBON 0.47 5% 1/4W F	1-249-386-11 CARBON 2.7 5%	<pre></pre> <variable resistor=""> <pre>1-237-514-21 RES, ADJ, CERMET 500 (+ 15)</pre></variable>	1-237-515-21 RES, ADJ, CERMET IK (+ 150V <relay></relay>

TSI STRACAL PARTS LIST

■の部品の定数は、X線量規制の規格を満足させるため、製造時セット毎に確認し決定したものです。万一この部品を交換する場合は、セットに付いている部品と同一のものをご使用下さい。

▲および ‱‱ 印の部品は,安全性を維持するために,重要な部品です。従って交換時は,必ず指定の部品を使用して下さい。 8-729-119-78 TRANSISTOR 2SC2785-HFB

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S	]	* * * * * * *	% % % O % % O % % O % % O % % O % % O % % O % % O % % O % % O % % O % % O	PITCH) 3				5% 1.	# # # # # #		7% 7%	K (APT)	Y)
GB G	NOIT	**************************************	0.068MF 0.01MF 47MF 0.01MF 47MF	CONNECTOR 3P CONNECTOR 3P CONNECTOR 3P CONNECTOR (5MM CONNECTOR (5MM		SSII9	7.8C	XI	* * * * * * * * * * * * * * * * * * *	NECTOR 3P NECTOR 4P NECTOR 12P	200 100K	RESISTOR> ADJ, CERMET 20K	PUSH (10 KEY)
	DESCRIPTION	#******* GE BOARD, *******	<pre><capacitor> <capacitor> -00 Film -00 Film -11 BLECT -00 Film -11 BLECT</capacitor></capacitor></pre>	NECTOL PIN, PIN, PIN,	PIN, CON PIN	FIN, DDE> DIODE DIODE	> IC IIPC4558C		********* HA BOARD ******	CONNECTOR> -11 PIN, CONNECTIN PIN, C	SISTOR> CARBON METAL	RIABLE RES,	ITCH> SWITCH,
	PART NO.	:*************************************	CCAP 1-136-175-00 1-136-153-00 1-124-477-11 1-136-153-00 1-124-477-11	*1-564-687-11 *1-564-687-11 *1-564-687-11 *1-564-687-11 *1-508-765-00	* -566-055-11 * -566-055-11 * -566-054-11 * -566-056-11 * -566-056-11	719-911 719-911	<10>	-247-903	*1-617-890-11	<pre>&lt;:03 &lt;:03 *1-566-055-11 *1-566-056-11 *1-566-054-11</pre>	<pre><resi: 1-215-469-91<="" 1-247-814-11="" pre=""></resi:></pre>	<vai 1-237-519-21</vai 	<sw 1-570-565-11</sw 
	REF. NO.	** ** ** **	C1006 C1007 C1009 C10109			D100	10102	R1012	# # # # # #	HA1 HA3 HA3	R1 R2	RVI	<u>r</u>
	REMARK					, ,	t t t t	25V 25V 55V	257 257 257 257	257 257 500 500 500 500	i.		
			1/48 1/48 1/48 1/48	1/44 1/44 1/44 1/44 1/44 1/44 1/44 1/44	1/48 1/48 1/48 1/48	1/46 1/46 1/46 1/46 1/46	€ € € € €	20% 20% 20%	200 200 200 200 200 200 200 200 200 200	700% 700%			
	ION	OR 2SA1175-HFE OR 2SC2785-HFE			. 2K . 2K 0K	10K 3.3K 3.3K 5.3K 10K 10K 5%	를 들 등 등 등 등 등 등 등 등 등 등 등 등 등 등 등 등 등 등	22.MF 22.MF	22MF 22MF 22MF 22MF	22NF 22NF 0.01MF 0.01MF 0.01MF 0.01MF	t> CONNECTOR 5P CONNECTOR 5P		2CT 2CT 12HF 12HF
	DESCRIPTION	TRANSI STOR TRANSI STOR	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON CARBON CARBON CARBON	GC BOARD	APACITOR> 1 ELECT 1 ELECT 1 RIECT	ELECT ELECT ELECT ELECT	BLECT BLECT CERAMIC CERAMIC CERAMIC CERAMIC	NECTOR	PIN,	IC LM7912CT IC LM7912CT IC UPC2412HF IC UPC2412HF
	PART NO.	8-729-119-76 8-729-119-78	-249-427-11 -249-428-11 -249-429-11 -249-427-11	1-249-420-11 1-249-429-11 1-249-427-11 1-249-427-11 1-249-421-11 1-249-425-11 1-249-421-11 1-249-421-11	-249-421- -249-425- -249-425- -249-421- -249-429-	249-42 249-42 249-42 249-42 249-42	*1-617-885-11	CAF  -124-916-11  -124-916-11  -124-916-11	-124-916-1 -124-916-1 -124-916-1 -124-916-1	1-124-916-11 1-124-916-11 1-101-004-00 1-101-004-00 1-101-004-00 1-101-004-00	-566-044-1 -566-057-1	-566-044-1	8-759-929-65 8-759-929-65 8-759-146-55 8-759-146-55
	REF. NO.	49 410	88 88 88 88 88 88 88 88 88 88 88 88 88	RR	R16 R17 R18 R19 R20	R21 R22 R23 R24 R24	* * * * *	585	<b>38 35</b> 6	110 C12 C13	6C1 6C2	<b>ද</b> ටව	1222

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REF. NO	). PART NO.	DESCRIPTION	REF.NO. P	PART NO.	DESCRIPTION
** ** **	***********	**************	1 90	-163-031-11	CERAMIC CHIP 0.01MF
	*1-647-257-11	HW BOARD		Q01Q>	<b>&gt;3</b> (
			H 21	-719-404	I ODE MAII
01	*4-026-910-00	MOLDERY 00 HOLDER, LED	0242	-719-404-46 -719-404-46 -719-404-46	DIODE MAIIO DIODE MAIIO
70	4-070-910	иогрек, г Е>	D8 88 8	-719-404-46 -719-404-46 -719-404-46	DIGDE MAIIO DIGDE MAIIO DIGDE MAIIO
D101 D102	8-719-812-42 8-719-812-41	DIODE TLY124 DIODE TLR124		-719-404 -719-404	TODE MAI
10	-216-065	ISTOR> WETAL GL	0112 0113 0114 015	-719-404-46 -719-812-42 -719-812-42 -719-812-42 -719-812-42	DIODE MAIIO DIODE TLY124 DIODE TLY124 DIODE TLY124 DIODE TLY124
S101	ī	H 198	016 017 018 019 020	-719-812-42 -719-812-42 -719-812-42 -719-812-42 -719-812-42	DIODE TLY124 DIODE TLY124 DIODE TLY124 DIODE TLY124 DIODE TLY124
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PART NO.	1-163-031-11 1-163-031-11	1-163-031-11	1-163-031-11 1-163-031-11	1-163-031-11 1-163-031-11	1-163-031-11 1-136-161-00 1-163-031-11	1-163-031-11	1-163-031-11 1-163-031-11 1-163-031-11	1-163-031-11 1-163-031-11	1-163-031-11 1-163-031-11 1-163-031-11	1-163-031-11	1-163-031-11 1-163-031-11 1-163-031-11	3-031 3-031	1-163-031-11 1-163-031-11 1-163-031-11	<del>, i i</del>	1-163-031-11 1-163-031-11 1-163-031-11	1-163-031-11 1-163-031-11 1-163-031-11	11 100 001 1	4719-109-88 8-719-109-88 8-719-109-88	8-719-109-88 8-719-109-88 8-719-109-88	8-719-109-88 8-719-109-88 8-719-109-88	8-719-109-88	8-719-109-88 8-719-109-88 8-719-109-88 8-719-109-88	-719- -719- -719-	8-719-106-23 8-719-106-23
REF. NO.	C141 C142	C143	C145	C148	C149 C150 C161	C163	C164 C165 C166	C168	C169 C170 C171	C173	C174 C175 C176	C177 C178	C179 C180 C181	C183	C191 C192 C201	C203 C203 C204	# 24 2			00 07 08 08		013 013 015		
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REF.NO.	* * * * * *			55	825	923	262	C11 C12	C15 C15 C15	C16	C18 C19 C21	C22 C23	C24 C25 C26	C41 C42	C43 C44 C45	C46 C47 C61	C63 C64	065 067 067	895 1693 1993	C31 C31 C97 C97	C102 C111	C121 C121 C122	C123 C124 C125 C126 C127	C128 C129

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REF. NO	03 010 011	012 013 014 015	Q17 Q18 Q19 Q20 Q21	023 023 025 025 025	027 028 029 030 0900	0901 0902 0903	JR1 JR2 JR3	R3 R3 R3 R54 R54	R6 R7 R8 R9 R10	R11 R12 R13 R14	R16 R17 R18 R19 R20	R21 R22 R23 R24 R25	R26 R27 R28 R29 R30
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[편 [편 ]		12P 10P 8P 12P 6P	12P 12P 12P 6P 10P	10P 13P		EL.) 181	(EL) TP1	(73	VM1.1	8P [3) 84P	100H 130H 100H	44EK 44EK 4EK	77 77
		CCTOR 12P CCTOR 10P SCTOR 8P CCTOR 12P SCTOR 6P	CCTOR 12P CCTOR 12P CCTOR 12P CCTOR 6P CCTOR 10P	CCTOR 13P	8P	IG-101 02AF(EL) 32AF(EL) 04AF	139AF (EL) BF Q 99AF-TPI	BF 02AF(EL) GP	-BVM1.1	(DP) 8P (ICI13)	10UH 10UH 33UH 10UH	DTC144 DTC144 DTC144	DTC144 DTC144 DTC144 DTC144
	£	CONNECTOR 12P CONNECTOR 10P CONNECTOR 8P CONNECTOR 12P CONNECTOR 6P	CONNECTOR 12P CONNECTOR 12P CONNECTOR 12P CONNECTOR 6P CONNECTOR 10P	CONNECTOR 13P	7751768P 7751768P 55040P 17529C 082M	D6142G-101 774HCT02AF(EL) 774HCT32AF(EL) 774HCT04AF	774HCT139AF (EL) 114051BF 101095Q 1082M 74HC299AF-TPI	1140518F 774HCT02AF (EL) 7082M 5082M 108043GP	UZEZ 82M 82M 475368CP-BVM1.1	, IC (DP) 8P , IC (ICI13)	CHIP	> STOR DTC144 STOR DTC144 STOR DTC144	STOR DTCI44 STOR DTCI44 STOR DTCI44 STOR DTCI44
DESCRIPTION	NECTOR>	PIN, CONNECTOR 12P PIN, CONNECTOR 10P PIN, CONNECTOR 8P PIN, CONNECTOR 12P PIN, CONNECTOR 6P	PIN, CONNECTOR 12P PIN, CONNECTOR 12P PIN, CONNECTOR 12P PIN, CONNECTOR 6P PIN, CONNECTOR 6P		1C SN75176BP 1C SN75176BP 1C X25040P 1C PST529C 1C TL082M	IC UPD6142G-101 IC TC74HCT02AF(BL) IC TC74HCT22AF(BL) IC TC74HCT04AF IC TC78LT		MC14051BF TC74HCT02AF TL082M TL082M DAC8043GP	UZEZ 82M 82M 475368CP-BVM1.1	OCKET, IC (DP) 8P	NDUCTOR VDUCTOR NDUCTOR NDUCTOR	STGR> ANSISTOR DTC144 ANSISTOR DTC144 ANSISTOR DTC144	RANSISTOR DTC144 RANSISTOR DTC144 RANSISTOR DTC144 RANSISTOR DTC144
DESCRIPTION	<connector></connector>	PIN, CONNECTOR PIN, CONNECTOR PIN, CONNECTOR PIN, CONNECTOR PIN, CONNECTOR	PIN, CONNECTOR PIN, CONNECTOR PIN, CONNECTOR PIN, CONNECTOR PIN, CONNECTOR	11 PIN, CONNECTOR 11 PIN, CONNECTOR 11 PIN, CONNECTOR	2222	1C UPD6142G-10 1C TC74HCT02AF 1C TC74HCT32AF 1C TC74HCT04AF	02 IC TC74HCT139AF 05 IC MC14051BF 68 IC CXD1095Q 48 IC TL082M 69 IC TC74HC299AF-	05 IC MC14051BF 00 IC TC74HCT02AF 48 IC TL082M 48 IC TL082M 73 IC DAC8043GP	76 10 NEFUZEZ 48 10 TL082M 48 10 TL082M 29 10 HD6475368CP-BVNI.1	21 SOCKET, IC (DP) 8P 11 SOCKET, IC (ICII3)	INDUCTOR INDUCTOR INDUCTOR CHIP INDUCTOR	ANSISTGR> TRANSISTOR DTC144 TRANSISTOR DTC144 TRANSISTOR DTC144	TRANSISTOR DTC144 TRANSISTOR DTC144 TRANSISTOR DTC144 TRANSISTOR DTC144
NO. DESCRIPTION	<connector></connector>	PIN, CONNECTOR PIN, CONNECTOR PIN, CONNECTOR PIN, CONNECTOR PIN, CONNECTOR	PIN, CONNECTOR PIN, CONNECTOR PIN, CONNECTOR PIN, CONNECTOR PIN, CONNECTOR	065-11 PIN, CONNECTOR 065-11 PIN, CONNECTOR <1C>	9-939-25 1C 9-939-25 1C 9-164-54 1C 9-995-76 1C	59-112-72 IC UPD6142G-10 59-172-00 IC TC74HCT02AF 59-172-01 IC TC74HCT32AF 59-233-66 IC TC74HCT04AF 59-981-48 IC TL082M	59-172-02 IC TC74HCT139AF 59-009-05 IC MC14051BF 59-938-68 IC CXD1095Q 59-81-48 IC TL082M 59-238-69 IC TC74HC299AF-	59-009-05 IC MC14051BF 59-172-00 IC TC74HCT02AF 59-981-48 IC TL082M 59-518-73 IC TL082M 59-518-73 IC DAC8043GP	59-518-60 10 KBPUZEZ 59-811-48 1C TLOSZM 59-811-48 1C TLOSZM 59-183-29 1C HD6475368CP-BVMI.1	-652-21 SOCKET, IC (DP) 8P -069-11 SOCKET, IC (ICII3)	-409-00 INDUCTOR -409-00 INDUCTOR -210-21 INDUCTOR CHIP -409-00 INDUCTOR	ANSISTGR> TRANSISTOR DTC144 TRANSISTOR DTC144 TRANSISTOR DTC144	TRANSISTOR DTC144 TRANSISTOR DTC144 TRANSISTOR DTC144 TRANSISTOR DTC144
PART NO. DESCRIPTION	<connector></connector>	IN, CONNECTOR IN, CONNECTOR IN, CONNECTOR IN, CONNECTOR IN, CONNECTOR	*1-566-064-11 PIN, CONNECTOR *1-566-064-11 PIN, CONNECTOR *1-566-064-11 PIN, CONNECTOR *1-566-058-11 PIN, CONNECTOR *1-566-062-11 PIN, CONNECTOR	*I-566-062-11 PIN, CONNECTOR *I-566-065-11 PIN, CONNECTOR <ic></ic>	2222	8-759-112-72 IC UPD6142G-10 8-759-172-00 IC TC74HCT02AF 8-759-172-01 IC TC74HCT3AF 8-759-233-66 IC TC74HCT04AF 8-759-981-48 IC TL082M	8-759-172-02 IC TC74HCT139AF 8-759-009-05 IC MC14051BF 8-759-938-68 IC CXD1095Q 8-759-981-48 IC TL082M 8-759-238-69 IC TC74HC299AF-	8-759-009-05 IC MC14051BF 8-759-172-00 IC TC74HCT02AF 8-759-981-48 IC TL022M 8-759-081-48 IC TL022M 8-759-518-73 IC DAC8043GP	8-759-981-48 IC TL082M 8-759-981-48 IC TL082M 8-759-981-48 IC TL082M 8-759-183-29 IC HD6475368CP-BVMI.1	1-526-652-21 SOCKET, IC (DP) 8P 1-540-069-11 SOCKET, IC (ICII3)	INDUCTOR INDUCTOR INDUCTOR CHIP INDUCTOR	ANSISTOR> TRANSISTOR DTC144 TRANSISTOR DTC144 TRANSISTOR DTC144	729-901-01 TRANSISTOR DTC144 -729-901-01 TRANSISTOR DTC144 -729-901-01 TRANSISTOR DTC144 -729-901-01 TRANSISTOR DTC144
NO. DESCRIPTION	<connector></connector>	1-566-064-11 PIN, CONNECTOR 1-566-062-11 PIN, CONNECTOR 1-566-060-11 PIN, CONNECTOR 1-566-058-11 PIN, CONNECTOR 1-566-058-11 PIN, CONNECTOR	1-566-064-11 PIN, CONNECTOR 1-566-064-11 PIN, CONNECTOR 1-566-058-11 PIN, CONNECTOR 1-566-058-11 PIN, CONNECTOR 1-566-062-11 PIN, CONNECTOR	1-566-065-11 PIN, CONNECTOR 1-566-065-11 PIN, CONNECTOR <ic></ic>	-759-939-25 1C -759-939-25 1C -759-164-54 1C -759-995-76 1C -759-981-48 1C	-759-112-72 IC UPD6142G-10 -759-172-00 IC TC74HCT02AF -759-172-01 IC TC74HCT32AF -759-233-66 IC TC74HCT04AF -759-981-48 IC TL082M	8-759-172-02 IC TC74HCT139AF 8-759-009-05 IC MC14051BF 8-759-938-68 IC CXD1095Q 8-759-981-48 IC TL082M 8-759-238-69 IC TC74HC299AF-	8-759-009-05 IC MC14051BF 8-759-172-00 IC TC74HCT02AF 8-759-981-48 IC TL022M 8-759-081-48 IC TL022M 8-759-518-73 IC DAC8043GP	-729-183-76 IC KEFUZEZ -759-981-48 IC TLO82M -759-981-48 IC TLO82M -759-183-29 IC HD6475568CP-BVMI.I	-652-21 SOCKET, IC (DP) 8P -069-11 SOCKET, IC (ICII3)	-409-00 INDUCTOR -409-00 INDUCTOR -210-21 INDUCTOR CHIP -409-00 INDUCTOR	<pre><transistor> 729-901-01 TRANSISTOR DTC144 729-901-01 TRANSISTOR DTC144 -729-901-01 TRANSISTOR DTC144</transistor></pre>	8-729-901-01 TRANSISTOR DTC144 8-729-901-01 TRANSISTOR DTC144 8-729-901-01 TRANSISTOR DTC144 8-729-901-01 TRANSISTOR DTC144

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REMARK			RESET)		* * * * * * *		160V 25V 160V 50V	2000 2000 2KV 3KV	2KV 630V 16V 16V 50V	500 500 500 500 500	2004 500V 500V	25V 50V 50V 100V 16V	50V 25V 16V
		1/10% 1/10% 1/10% 1/10% 1/10% 1/10% 1/10%	5% 1/10W 5% 1/10W 5% 1/10W (PASS WORD F		**  **  **  **  **  **  **  **  **  **	į	20% 20% 210%	10% 10% 10% 10%	10% 20% 5%% 5%%	24% 24% 24% 24%	0000 × 5	20% % 20% % 10% % 20% % % % % % % % % % % % % % % % %	20% 20%
		น ก่างกำกับกับ กำกับกำกับ กำ	1K 5% 2.7K 5% 2.7K 5% BOARD (1 KE)	7	**************************************		10MF 47MF 33MF 0.33MF	0.047MF 0.047MF 330PF 0.0063MF 470PF	0.0047MF 0.0033MF 22MF 47MF 100PF	0.0022MF 10MF 0.001MF 0.1MF	1MF 0.22MF 330PF 0.01MF 0.03MF	4.7MF 0.001MF 0.01MF 0.047MF	0.047MF 100MF 330MF
MOTTOLOSSA	DESCRIPTION		AL GLAZE AL GLAZE AL GLAZE AL GLAZE TCH, KEY	cff, well	:********* PA BOARD, COI *******	<capacitor></capacitor>	ELECT ELECT ELECT FILM						
Oli Ba	FARI NU.			1-5/2-482-11 5W11 CCRYSTAL> 1-577-121-11 VIBR	***********	<cap.< td=""><td>1-124-046-00 1-126-967-11 1-123-024-21 1-136-171-00</td><td>1-108-700-11 1-108-700-11 1-102-030-00 1-136-072-00 1-161-753-00</td><td>1-162-114-00 1-136-557-11 1-126-233-11 1-124-910-11 1-102-973-00</td><td>1-108-796-11 1-126-964-11 1-102-074-00 1-136-165-00 1-136-169-00</td><td>1-136-111-00 1-136-169-00 1-102-030-00 1-130-736-11 1-130-94-11</td><td>1-123-369-00 1-102-074-00 1-136-153-00 1-108-634-11 1-126-664-11</td><td>1-101-006-00 1-126-948-11 1-126-541-11</td></cap.<>	1-124-046-00 1-126-967-11 1-123-024-21 1-136-171-00	1-108-700-11 1-108-700-11 1-102-030-00 1-136-072-00 1-161-753-00	1-162-114-00 1-136-557-11 1-126-233-11 1-124-910-11 1-102-973-00	1-108-796-11 1-126-964-11 1-102-074-00 1-136-165-00 1-136-169-00	1-136-111-00 1-136-169-00 1-102-030-00 1-130-736-11 1-130-94-11	1-123-369-00 1-102-074-00 1-136-153-00 1-108-634-11 1-126-664-11	1-101-006-00 1-126-948-11 1-126-541-11
· •	KEF. NO.		R191 R208 R209 R209	75 IX	* * * * * * *		C101 C102 C103	C105 C106 C107 C108 C109	C110 C111 C116 C117 C117	C119 C120 C121 C122 C123	C124 C125 C126 C127 C127	C129 C130 C201	C203 C204 C204
	KEMAKK												aaaa
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		25% 26%%%% 26%%%%%%%%%%%%%%%%%%%%%%%%%%%	%%%%% %%%% MMMM MMMM	2000 2000 2000 2000 2000 2000 2000 200	%%%%% WWWWWW	20%	25% 25% 25%	25%%%% 25%%%%%	200000	%%%%% ````````````````````````````````	<b>MMMM</b> MM	2000000	2222 2222 2222 2222 2222 2222 2222 2222 2222
		10K 10K 10K 10K 10K 10K 10K 10K	10K 11K 10K 12Z 11K 11K 11K	1K 10K 1K 1K 10K 100K	10K 10K 10K 100K	10K	2.7K 10K 2.7K	10K 2.7K 10K 2.7K 56K	10K 100K 1K 22K 100K	33K 10K 20K 43K 10K	10K 10K 10K 10K	10K 10K 100K 10K 22K	47K 47K 10K 10K
	ESCRIPTION	GLAZE GLAZE GLAZE GLAZE GLAZE GLAZE GLAZE GLAZE GLAZE GLAZE	GLAZE GLAZE GLAZE GLAZE GLAZE	GLAZE GLAZE GLAZE GLAZE	GLAZE GLAZE GLAZE GLAZE GLAZE		GLAZE GLAZE GLAZE GLAZE	GLAZE GLAZE GLAZE GLAZE GLAZE	GLAZE GLAZE GLAZE GLAZE GLAZE	GLAZE GLAZE GLAZE GLAZE GLAZE	GLAZE GLAZE GLAZE GLAZE GLAZE	C GLAZE C GLAZE C GLAZE L GLAZE L GLAZE	L GLAZE L GLAZE L GLAZE L GLAZE L GLAZE
	DESCR	METAL G METAL G METAL G METAL G METAL G METAL G CARBON METAL G METAL G METAL G METAL G	METAL GI CARBON METAL GI METAL GI METAL GI CARBON CARBON	CARBON METAL G CARBON METAL G	METAL METAL METAL METAL METAL	METAL	METAL METAL METAL METAL	METAL METAL METAL METAL METAL	METAL METAL METAL METAL METAL	METAL METAL METAL METAL METAL	METAL METAL METAL METAL	METAL METAL METAL METAL	METAL METAL METAL
_	NO. PART NO.		1-216-073-00 1-249-417-11 1-216-073-00 1-216-049-00 1-249-417-10 1-249-417-10 1-249-417-11				1-216-073-00 1-216-059-00 1-216-073-00 1-216-059-00	1-216-073-00 1-216-059-00 1-216-073-00 1-216-059-00 1-216-091-00	1-216-073-00 1-216-097-00 1-216-049-00 1-216-081-00 1-216-097-00	1-216-085-00 1-216-073-00 1-216-080-00 1-216-088-00 1-216-073-00	1-216-097-00 1-216-073-00 1-216-073-00 1-216-073-00 1-216-073-00	1-216-073-00 1-216-073-00 1-216-097-00 1-216-073-00 1-216-081-00	1-216-089-91 1-216-089-91 1-216-073-00 1-216-073-00
	REF. NO.	R31 R32 R33 R34 R35 R35 R40 R41 R41	R442 R443 R443 R446 S50 R50 R50 R50 R50 R50 R50 R50 R50 R50 R	R R R R R R R R R R R R R R R R R R R	R56 R57 R59 R60	R61	R62 R63 R64 R65	R66 R67 R68 R69 R70	R71 R73 R74 R75	R77 R78 R79 R80 R81	R82 R83 R84 R85 R85	R87 R88 R89 R90 R91	R92 R93 R94 R95

TSI STRAY LIST IS ELECTRICAL PARTS LIST

Les composants identifies par u	trame et une marque A s critiques pour la securite	Nelesremplacerqueparunepi	
The components identified by	shading and mark $\Delta$ are critical for safety	Replace only with part number specified.	:

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The components identified by **M** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

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		16 1740 1740 20 10	10 1/20 20 20 1/40 1/60	1/4W 1/50W 1/4W 1/4W 1/4W	1/40 1/40 1/40 1/40 1/40 1/40	1/40 1/40 1/40 1/40 1/40	1/4W 1/4W 1/4W 1/4W 1/4W	1/40 1/40 1/40 1/40 1/40	20 20 20 20 1/40	1/46 1/46 1/40 1/40 1/40 1/40	1/40 1/40 1/40 1/40 1/40	1/40 1/40 1/40 1/40	を 発出 記録 日田
	752 352-1478 353-14788 353-14788 353-14788 353-14788	MMMMM %%%%%		25% 25 2020 27	<b>3000000</b>	るるようららい	~%%%%%	22%%%	22222	2222 2222 2222 2222 2222 2222 2222 2222 2222	2222 2222 2222 2222 2222 2222 2222 2222 2222	% %%% HHH	No _
	A1117 2278 2278 2278 2278	0.82 180K 1.5K 18K 6.8	1.2 470 10K 39K	27K 27K 6.8K 82K	4.7K 10K 8.2K 1K 1K	100K 3.3K 47K 6.2K 3.9K	1K 10K 1.5K 5.6K	2.7K 2.7K 1K 3.3K 100K	15K 15K 10K	2.2K 10 10K 10K 100K	10K 22K 680 10K 27K	4.7K 510K 120K 36K	がいす。かいに行いて
DESCRIPTION	TRANSISTOR 2S. TRANSISTOR 2SS TRANSISTOR 2SS TRANSISTOR 2SS TRANSISTOR 2SS TRANSISTOR 2SS TRANSISTOR 2SS	METAL OXIDE CARBON CARBON WETAL OXIDE METAL OXIDE	METAL OXIDE FUSIBLE METAL OXIDE METAL	METAL METAL CARBON CARBON CARBON	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON WETAL WETAL CARBON	CARBON CARBON CARBON METAL METAL	CARBON CARBON CARBON CARBON CARBON	METAL OXIDE METAL OXIDE METAL OXIDE METAL OXIDE CARBON	CARBON CARBON CARBON CARBON CARBON	CARBON CARBON CARBON METAL	MBTAL MBTAL MBTAL MBTAL MBTAL	線量規制の規格を満足させ し決定したものです。 する場合は,セットに付いて 用下さい。
٦١			1/2										V 00 .00 (01)
PART NO.	8-729-119-76 8-729-119-78 8-729-119-78 8-729-119-78 8-729-119-78	1-216-348-00 1-247-885-00 1-249-419-11 1-216-464-11 1-216-359-00	1-216-350-11 1-212-998-00 1-215-898-11 1-215-459-00	1-215-455-00 1-249-434-11 1-249-427-11 1-249-440-11	1-249-425-11 1-249-429-11 1-249-428-11 1-249-417-11 1-249-437-11	1-249-441-11 1-249-423-11 1-215-461-00 1-215-440-00 1-249-424-11	1-249-417-11 1-249-429-11 1-249-419-11 1-215-439-00 1-215-439-00	1-249-422-11 1-249-422-11 1-249-417-11 1-249-423-11 1-249-441-11	1-215-899-11 1-215-899-11 1-215-899-11 1-215-899-11 1-249-429-11	1-249-421-11 1-249-393-11 1-249-429-11 1-249-441-11 1-249-429-11	1-249-429-11 1-249-433-11 1-249-415-11 1-249-429-11 1-215-455-00	1-215-437-91 1-215-486-00 1-215-471-00 1-215-458-00	Mの部品の定数は、 造時セット毎に確認 万一この部品を交換 と同一のものをご便
REF. NO.	0109 0110 0111 0201 0202 0202	R102 R103 R104 R104	•	R125 R125 R127 R128 R129	R130 R131 R132 R133	R135 R136 R137 R138 R139	R140 R141 R142 R143	R146 R148 R150 R151	R201 R202 R203 R204 R204	R206 R207 R208 R209 R210	R211 R212 R213 R213 R214 R220	R221 R223 R223 R224 R224 R225	・ 通に かった 7-53
REMARK	255V 550V 550V 550V 16V 16V	50V 50V 16V											7
	20% 20% 20% 20% 20%	5% 20%								3P 4P			
	5646 PG P	62 i	•							TTCH)		(E)	
ION	100/F 0.047/F 0.047/F 10/F 10/F 0.01/F 330/KF	0.03MF 0.033MF 100MF	ບບບບ	155119 155119 RD3.0E582 155119 RD3.9E582	CR02AM-8 CR02AM-8 CR02AM-8	-11p 19 19	61 61 61	vec	CORE)	(5MM P	2581407-0 2502555-2	2SC3675 2SC2785-HF 2SC2688-LK 2SC2688-LK	生を維持する 交換時は,必
E	BLECT CERAMIC CERAMIC BLECT BLECT FILM FILM BLECT		0E> 0100E RU-1C 0100E RU-1C 0100E RU-1C 0100E RU-1C	D100E D100E D100E D100E	DIODE THYRIS THYRIS DIODE	1C UPC574J-TP 1C UPC574J-TP 1C UPC574J-TP 0100E 1SS119 0100E 1SS119		IC UPC1394C IC NJK2903D IC NJK2903D IC TI NJK2903D	<sup>3</sup> <sup>3</sup> <sup>3</sup> <sup>3</sup>	<pre><connector> -00 PIN, CONNECTOR -00 PIN, CONNECTOR</connector></pre>	CTRANSISTOR> -71 TRANSISTOR -62 TRANSISTOR		8品は,安全やす。従って,て下さい。
.NO. PART NO. DESCRIP	1-126-948-11 1-101-006-00 1-101-006-00 1-124-915-11 1-124-915-11 1-126-915-11 1-126-915-11 1-126-915-11 1-126-915-11	1-101-004-00 1-136-171-00 1-124-122-11	8-719-300-80 DI 8-719-300-80 DI 8-719-300-80 DI 8-719-300-80 DI 8-719-301-19 DI	8-719-911-19 8-719-911-19 8-719-109-63 8-719-109-63 8-719-101-19	8-719-911-19 8-719-000-28 8-719-000-28 8-719-911-19 8-719-911-19	759-107-91 -759-107-91 -719-911-19 -719-911-19	8-719-911-19 8-719-911-19 8-719-911-19	<1C><1C><1C><1C><1C><1C><1C><1C><1C><1C>	<pre>&lt;-(39-303-91 1 <coil> 1-459-215-00 C</coil></pre>	<00 1-508-765-00 1-508-766-00	<pre><tra 8-720-201-62<="" 8-729-201-62="" 8-729-802-71="" <tra="" pre=""></tra></pre>	8-729-804-48 8-729-8119-78 8-729-119-80 8-729-119-80	び (重要な語の) の部品を
REF.NO.	C207 C203 C213 C213 C215 A C217 A		0102 0103 0104 0105			≪!≪!		5885		PA1 **	0101		▲およ ために ず指定

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PA	QA	440

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4	9B	•	The components identified by In In this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.  Should replacement be required, replace only with the required, replace only	nents identifi carefully fac to satisfy rep n. acement be	fentified by factory-soly factory-soly regulatic nt be required to the factory factor factory factor fact	Minth relecter ons rec ons rec	ed by M in this manual tony-selected for each gulations regarding X-required, replace only		Les composants identifies par une trarme et une marque  acritiques pour la securite. Neles remplacer quepar une piece portant le ni meno specifie.	sparune A sont unepiece	The components is shading and mark $L$ for safety. Replace only with propertied.	onents i Id mark 2 Ily with	dent ∆an oart	ified by e critical number
(T. )	.NO. PART NO.	DESCRIPTION	IPTION	29 5 0	, man		REMARK	REF. NO.	PART NO.	DESCRIPTION	10N			REMARK
R226 KR227 KR227		METAL METAL METAL			1% 1/4W 1/6W 1/6W 1/6W	44.0 66.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1		R6	1-215-438-00	METAL	5.1K	** ** **	1/44	# # # # # #
R232 R232 R237	1-2	CARBON	•			4 4 3 3 3 3	en Terrene en 140 TE	+ + + + +	*1-617-895-11	QA BOARD	. * 6 6 6 6 6 6 6 6	<del> </del> 	; ; ; ; ;	
R238 R240 R240	1-215-437-91   1-215-486-00	METAL METAL METAL	4.7k 510k	4.7K 510K	1% 1/4W 176W 1% 1/4W 1% 1/4W	: <b>3</b> :83:3			<cap,< td=""><td><capacitor></capacitor></td><td></td><td></td><td></td><td></td></cap,<>	<capacitor></capacitor>				
R243 R243 R243 R245	7 7777	CARBON CARBON CARBON CARBON CARBON				33333		32322	1-108-692-11 1-126-235-11 1-101-004-00 1-108-692-11 1-126-235-11	MYLAR ELECT CERAMIC MYLAR ELECT	0.01MF 100MF 0.01MF 0.01MF		10% 20% 10% 20%	200V 16V 50V 200V 16V
R248 R250 R301 R302		CARBON CARBON CARBON CARBON CARBON				4 4444 3 333333		53 53 53 53 53	1-101-004-00 1-108-692-11 1-126-235-11 1-101-004-00 1-102-951-00	CERAMIC MYLAR ELECT CERAMIC CERAMIC	0.01MF 0.01MF 100MF 0.01MF 15PF		10% 20% 5%	50V 200V 16V 50V 50V
R304 R305 R305		CARBON CARBON CARBON				45.5		C11 C12	I-102-951-00 I-102-951-00	CERAMI C CERAMI C	15PF 15PF	_,_,	%% 202	50V 50V
R308 R308 R309						45 45 45 45 45 45 45 45 45 45 45 45 45 4		R1 R2 R3	<pre><res: 1-215-449-00="" 1-215-449-01="" 1-249-439-11<="" pre=""></res:></pre>	<pre><resistor> -00 METAL -00 METAL -11 CARBON</resistor></pre>	15K 855K 888	%%% 24%	1/40	
R311 R312 R313	1-247-887-00 1-247-881-00 1-202-719-00	CARBON CARBON SOLID		220K 120K 18	5% 1/4w 5% 1/4w 10% 1/2w	4.6. 2.6.6.		}	<switch></switch>	ZCH>		2		
R350	1-249-385	-11 CARBON	N 2.2		5% 1/4W	4W F		S1 S2 S3	1-570-857-11 1-570-857-11 1-570-857-11	SWITCH, SWITCH, SWITCH, S	SLIDE SLIDE SLIDE			
RV1	1-237-500-21		ADJ, CERMET	1.K	(HV ADJ)			# # # # #	***************************************	******** QB BOARD	** ** ** ** ** **	* * * *	** ** ** **	** ** ** **
<u> </u>	<tra< td=""><td></td><td></td><td>NOZI</td><td>TAL DRIVE</td><td>tr)</td><td></td><td></td><td><cap< td=""><td>******* <capacitor></capacitor></td><td></td><td></td><td></td><td></td></cap<></td></tra<>			NOZI	TAL DRIVE	tr)			<cap< td=""><td>******* <capacitor></capacitor></td><td></td><td></td><td></td><td></td></cap<>	******* <capacitor></capacitor>				
132	1-437-079-00 1-439-384-11	TRANSFORMER, LOT		HORIZONTAL	TAL DRIVE	(E) +	) ) ) ) )	222	1-108-692-11	MYLAR ELECT	0.01MF 100MF		10% 20%	200V 16V 50V
** * * *	*1-617-891-21	********** PB BOARD ******	RD ************************************	¥ \ \ \	**	+ + + + +	+ + + + + + + +	325	1-101-004-00 1-108-692-11 1-126-235-11		0.01MF 100MF		10% 20%	200v 16v
	*4-341-752-01	EYELET	EYI~EY7	77.				8588	1-101-004-00 1-108-692-11 1-126-235-11	CERAMIC MYLAR ELECT	0.01MF 0.01MF 100MF		10%	50V 200V 16V 50V
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3 <b>3</b>	1-130-959-00 1-130-959-00	FILM	0.0	0.047MF	10%		400V	C11 C12	1-102-951-00 1-102-951-00	CERAMI C	15PF		22%	20A
	N00>	<connector></connector>							<res1< td=""><td></td><td></td><td></td><td></td><td></td></res1<>					
PBI	*1-508-766-00	PIN, CC	CONNECTOR (5MM PITCH)	(SMM	PITCH) 4P	Ω.,	<b></b>	R1	1-215-449-00	METAL	15K	24.24 24.24	1/49	
	<res< td=""><td>KRESI STOR&gt;</td><td></td><td></td><td></td><td></td><td></td><td>£</td><td>1-215-449-00</td><td></td><td>ISK</td><td>7%</td><td>I/4W</td><td></td></res<>	KRESI STOR>						£	1-215-449-00		ISK	7%	I/4W	

■の部品の定数は、X線量規制の規格を満足させるため、製造時セット毎に確認し決定したものです。万一この部品を交換する場合は、セットに付いている部品と同一のものをご使用下さい。

△および ‱‱ 印の部品は,安全性を維持する ために,重要な部品です。従って交換時は,必 ず指定の部品を使用して下さい。

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PART NO.	1-102-074-00 1-102-074-00 1-136-165-00 1-101-004-00	1-101-004-00 1-101-004-00 1-101-004-00	I-101-004-00 I-101-004-00 I-101-004-00 I-101-004-00	1-101-004-00 1-101-004-00 1-101-004-00 1-101-004-00 1-101-004-00	1-101-004-00 1-101-004-00 <con< td=""><td>#1-566-056-11 #1-566-056-11 #1-566-054-11 #1-566-060-11</td><td>*1-566-058-11 *1-566-056-11 *1-566-056-11 *1-566-056-11</td><td>8-719-971-20 8-719-971-20 8-719-911-19 8-719-911-19</td><td>8-719-110-03 8-719-911-19 8-719-110-03</td><td>&lt;100</td><td>8-759-145-58 8-759-145-58 8-759-145-58 8-759-145-58 8-759-701-65</td><td>8-759-107-53 8-759-503-91 8-759-145-58 8-759-145-58 8-759-145-58</td><td>8-759-145-58 8-759-145-58 8-759-145-58 8-759-145-58 8-759-146-53 8-759-140-53</td><td>-759-140</td></con<>	#1-566-056-11 #1-566-056-11 #1-566-054-11 #1-566-060-11	*1-566-058-11 *1-566-056-11 *1-566-056-11 *1-566-056-11	8-719-971-20 8-719-971-20 8-719-911-19 8-719-911-19	8-719-110-03 8-719-911-19 8-719-110-03	<100	8-759-145-58 8-759-145-58 8-759-145-58 8-759-145-58 8-759-701-65	8-759-107-53 8-759-503-91 8-759-145-58 8-759-145-58 8-759-145-58	8-759-145-58 8-759-145-58 8-759-145-58 8-759-145-58 8-759-146-53 8-759-140-53	-759-140
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PART NO.	1-215-445-00 1-215-448-00 1-249-424-11	1-214-940-11 1-215-473-00 1-247-895-00 1-247-895-00 1-215-445-00	1-215-441-00 1-215-445-00 1-215-445-00 1-249-421-11 1-214-947-00	1-215-493-00 1-247-895-00 1-247-895-00 1-215-445-00 1-215-443-00	1-215-445-00 1-215-445-00 1-249-422-11	1-215-445-00 1-249-429-11 1-215-469-91 1-215-437-91	1-215-447-00 1-215-445-00 1-215-445-00 1-215-45-00 1-249-425-11	435 435 421			1-249-422-11 1-249-382-11 1-249-382-11 1-216-355-11 1-215-421-00 1-215-453-00		2215	
REF. NO.	R46 R47 R48	R50 R51 R53 R53	R55 R55 R58 R60	R61 R62 R63 R64 R65	R66 R67 R68 R70	R71 R72 R73 R74	R75 R76 R77 R78	R81 R82 R83 R84 R110	R111 R112 R113 R114 R115	R120 R121 R122 R123 R124		R212 R216 R217 R218 R220	R221 R222 R223	R225
REMARK				,										
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DESCRIPTION	1C UPC4558C 1C UPC4558C 1C UPC4558C	RANSISTOR> 2 TRANSISTOR 2 TRANSISTOR 3 TRANSISTOR	RANSI RANSI RANSI RANSI			METAL METAL CARBON CARBON CARBON	CARBON CARBON CARBON METAL METAL	METAL METAL METAL METAL CARBON	METAL METAL METAL METAL CARBON	METAL METAL METAL CARBON METAL	METAL CARBON CARBON METAL CARBON	CARBON CARBON CARBON CARBON CARBON	METAL CARBON METAL METAL	METAL METAL
PART NO.	8-759-145-58 8-759-145-58 8-759-145-58	<t>-729-313-8</t>	8-729-315-82 8-729-313-82 8-729-313-82 8-729-386-12 8-729-386-12	8-729-313-82 8-729-386-12 8-729-386-12 8-729-386-12 8-729-386-12	-7.29-900-36 <re< th=""><th>1-215-445-00 1-215-439-00 1-249-417-11 1-249-417-11 1-249-417-11</th><th>1-249-417-11 1-249-423-11 1-249-423-11 1-215-433-00 1-215-433-00</th><th>1-215-439-00 1-215-439-00 1-215-445-00 1-215-445-00 1-249-426-11</th><th>1-215-439-00 1-215-439-00 1-215-445-00 1-215-445-00 1-249-426-11</th><th>1-215-445-00 1-215-445-00 1-215-444-00 1-249-423-11 1-215-445-00</th><th>22222</th><th>9-429 9-417 9-417 9-429</th><th>1-215-469-91 1-249-429-11 1-215-469-91 1-215-437-91</th><th>1-215-437-91 1-215-431-00</th></re<>	1-215-445-00 1-215-439-00 1-249-417-11 1-249-417-11 1-249-417-11	1-249-417-11 1-249-423-11 1-249-423-11 1-215-433-00 1-215-433-00	1-215-439-00 1-215-439-00 1-215-445-00 1-215-445-00 1-249-426-11	1-215-439-00 1-215-439-00 1-215-445-00 1-215-445-00 1-249-426-11	1-215-445-00 1-215-445-00 1-215-444-00 1-249-423-11 1-215-445-00	22222	9-429 9-417 9-417 9-429	1-215-469-91 1-249-429-11 1-215-469-91 1-215-437-91	1-215-437-91 1-215-431-00
REF. NO.	1C21 1C22 IC23	001		011 011 012		RR22 R83 854 854	R6 R7 R8 R9 R10	RII RII RII RII RII RII	R16 R17 R19 R20	R21 R22 R23 R24 R25	R27 R28 R29 R30	R32 R34 R35 R36	R40 R41 R42 R43	R44 R45

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	×	NSI (	ING (	# # # #	20% 20%	20% 5% 20%			1/46	1/40	1/4W 1/4W 1/4W	FINE E ADJ	FINE E ADJ
PTION	ISITION CIRCUIT BLOCK RESISTOR>	ADJ, CERMET 2K (TERRESTRIAL MAGNETISM C ADJ, CERMET 5K (TERRESTRIAL MAGNETISM C ADJ, CERMET 5K (BERESTRIAL MAGNETISM C (BEARET SK	ADJ, CERMET 10K ADJ, CERMET 10K ADJ, CERMET 10K (BEAM LANDING ADJ, CERMET 2K	**************************************	0.1MF 0.01MF 47MF	47MF 0.01MF 47MF	t> CONNECTOR 8P CONNECTOR 6P	MC14066BCP MC14066BCP	398 398 398 113 398 124 124 124 124 124 124 124 124 124 124		22K 1 22K 1 22K 1	RESISTOR> ADJ, CERMET 10K (LANDING FINE ADJ.TOP.L) ADJ, CERMET 10K (LANDING FINE ADJ.BOTTOM.L) ADJ. FEBUET 10K	CERMET 10K (LANDING FINE
DESCRIPTION	COMPO RIABLE	RES, AD (T RES, AD RES, AD	RES, ADJ RES, ADJ RES, ADJ	R2 BOARD,	CCAPACITOR> -00 FILM -11 ELECT	ELECT FILM ELECT	NECTOR	21	ISTOR> METAL METAL METAL METAL METAL	METAL METAL METAL METAL		<pre><variable -01="" -21="" adj,="" adj,<="" pre="" res="" res,="" resis=""></variable></pre>	
PART NO.	1-249-429-11	1-237-516-21 1-237-517-21 1-237-517-21	1-237-518-21 1-237-518-21 1-237-516-21	**************************************	CCAP 1-136-165-00 1-136-153-00 1-124-589-11	1-124-589-11 1-136-153-00 1-124-589-11	<con *1-566-060-11 *1-566-058-11</con 	<1C>	<pre><resi -215-459-00="" 1-215-459-00="" 1-215-459-00<="" pre=""></resi></pre>	1-215-459-00 1-215-453-00 1-215-453-00 1-215-453-00 1-215-453-00	453	<pre><var 1-237-518-21="" 1-237-518-21<="" pre=""></var></pre>	1-237-518-21
REF. NO.	RB2	RV1 RV2 RV3	RV4 RV5 RV6	** ** ** ** ** **	C1000 C1001 C1001	C1004	CN11 *	I C100 I C101	R1000 R1001 R1002 R1003	R1005 R1006 R1007		RV100 RV101	
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				5% 110 F 11/40 F 11/40 1	12% 12% 17.44% 17.44% 17.44% 17.44%		12, 1/46, 17, 46, 17, 17, 46,	12% 12% 12% 17,46% 17,46% 17,46% 17,46%	1/46 1/46 1/46 10 10 1/46	1% 1/4% 1/4% 1/4% 1/4% 1/4% 1/4% 1/4% 1/	1% 1/4% 1/4% 1% 1/4% 1/4% 1/4% 1/4% 1/4%		вьоск
	1/48 1/48 1/49 19	%%%%% P	1/40 1/40 1/40 1/40 1/40			1/46 1/46 16 1/46 1/49			5%% 1/4% 1/4% 1/4% 1/4% 1/4% 1/4% 1/4% 1/	***************************************		1/46 1/46 1/49 1/49 10	RCUIT BLOCK
DESCRIPTION	CARBON 2.7K 5% 1/4W CARBON 1.2 5% 1/4W CARBON 1.2 5% 1/4W WETAL OXIDE 3.3 5% 1/4W RGTAL	METAL 22K 1% METAL 22K 1% CARBON 5.6K 5% METAL 24K 1% METAL 10K 1%	5%%% 11/4% 1	74%%%% %%%%%%	₩ ₩ ₩ ₩	5% 11/4w 1% 1% 1/4w 1/4w	%%%%% 	%%%%% %%%%%%	2.7K 5% 1/4W 1.2 5% 1/4W 1.2 5% 1/4W XIDE 3.3 5% 1W 1K 1% 1/4W	22K 1% 12 22K 1% 12 22K 1% 11 10K 11 10	22K 1% 3.3K 5% 24K 1% 10K 1% 22K 1%	3.3K 1% 1/4W 2.7K 5% 1/4W 1.2 5% 1/4W 3.3 5% 1/4W	STOR BLOCK> COMPOSITION CIRCUIT BLOCK
REF.NO. PART NO. DESCRIPTION	2.7K 5% 1/4W 1.2 5% 1/4W 1.2 5% 1/4W XIDE 3.3 5% 1W	METAL 22K 1% METAL 22K 1% CARBON 5.6K 5% METAL 24K 1% METAL 10K 1%	22K 1% 1/49 6.8K 1% 1/49 5.6K 5% 1/49 1.2 5% 1/49 1.2 5% 1/49	1XIDE 3.3 5% 1X 1X 22K 1% 22K 1% 5.6K 5%	24K 11% 22K 11% 22K 11% 5.8K 11% 5%	1.2 5% 1/4w 1.2 5% 1/4w 1.4 3.3 5% 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	22K 1% 22K 1% 10K 1% 10K 1% 22K 1%	3.3% 24% 10% 122 3.3% 123 3.3%	9-422-11 CARBON 2.7K 5% 1/4W 9-382-11 CARBON 1.2 5% 1/4W 9-382-11 CARBON 1.2 5% 1/4W 6-355-11 NETAL OXIDE 3.3 5% 1W 5-421-00 NETAL IX 1% 1/4W	METAL 22K 1% 1 METAL 22K 1% 1 NGTAL 22K 1% 1 METAL 10K 1% 1 METAL 10K 1% 1	**************************************	3.3K 1% 1/4W 2.7K 5% 1/4W 1.2 5% 1/4W 1.2 5% 1/4W 0B 3.3 5% 10	

				5% 1/44	**************************************	10P :K> BLOCK		5% 1/44	**************************************	
	PTION	CONNECTOR 12P CONNECTOR SP CONNECTOR SP CONNECTOR 4P CONNECTOR 4P CONNECTOR 4P CONNECTOR 2P CONNECTOR 3P CONN		2.7K	**************************************	DR, MULTIPLE CIRCUIT BLOC			(BVM-2811 (BVM-2811);, MULTIPLE	RD13ESB2 RD13ESB2
	DESCRIPTION	CCCONNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNN	CONNE CONNE PIN,	I	******** V BOARD ******	-II CONNECTOR, I COMPOSITION CIR- -II COMPOSITION	10	CARBON	******* V2 BOA ******  NECTOR> CONNEC	D10DE D10DE
	PART NO.	#1-566-064-11 #1-566-057-11 #1-566-057-11 #1-566-057-11 #1-566-056-11 #1-566-056-11 #1-566-054-11 #1-566-054-11 #1-566-054-11 #1-566-054-11 #1-561-337-00 #1-561-337-00 #1-561-337-00 #1-561-337-00 #1-561-337-00	1 - 22	<resi 1-247-841-11</resi 	*1-627-677-11	1-563-265-11 <003 1-232-350-11	CRESII 1-249-405-11 1-249-405-11 1-249-405-11 1-249-405-11 1-249-405-11	1-249-405-11	*** 136	8-719-110-36 8-719-110-36
	REF. NO.	1816 1816 1817 1820 1823 1823 1832 1833 1834 1835 1835 1835	TB38 TB39 TB40 TB101	R100	** ** ** **	CD	######################################	87	CN2 CN2	02
2 TA TB V V2	REF.NO. PART NO. DESCRIPTION REMARK	RV104 1-237-518-21 RES, ADJ, CERMET 10K  (LAMDING FINE ADJ.TOP.R)  RV105 1-237-518-21 RES, ADJ, CERMET 10K  (LANDING FINE ADJ.BOTTOM.R)  RV106 1-237-518-21 RES, ADJ, CERMET 10K  (LANDING ADJ.PRESET.TOP.L)  RV107 1-237-518-21 RES, ADJ, CERMET 10K  (LANDING ADJ.PRESET.TOP.C)  RV109 1-237-518-21 RES, ADJ, CERMET 10K  (LANDING ADJ.PRESET.TOP.C)  RV110 1-237-518-21 RES, ADJ, CERMET 10K  (LANDING ADJ.PRESET.TOP.R)  RV111 1-237-518-21 RES, ADJ, CERMET 10K  (LANDING ADJ.PRESET.TOP.R)  RV111 1-237-518-21 RES, ADJ, CERMET 10K  (LANDING ADJ.PRESET.BOTTOM.R)  SWI 1-553-634-00 SWITCH, ROTARY (LANDING ADJ)  SWJ 1-553-634-00 SWITCH, ROTARY (LANDING ADJ)	1-692-175-11 SWITCH, TOGGLE (LANDING ************************************	<connector> *1-566-054-11 PIN, CONNECTOR</connector>	TA2 *1-566-055-II PIN, CONNECTOR 3P TA3 *1-566-056-II PIN, CONNECTOR 4P TA4 *1-566-057-II PIN, CONNECTOR 5P TA5 *1-566-058-II PIN, CONNECTOR 6P	TA6 *1-566-055-11 PIN, CONNECTOR 3P TA7 *1-566-028-11 PIN, CONNECTOR 6P TA8 *1-566-042-11 PIN, CONNECTOR 3P TA9 *1-566-045-11 PIN, CONNECTOR 6P TA10 *1-566-045-11 PIN, CONNECTOR 6P	TAII *1-566-045-II PIN, CONNECTOR 6P TAI2 1-508-786-00 PIN, CONNECTOR (5MM PITCH) 2P TAI3 *1-561-337-00 CONNECTOR, MULTI TAI4 *1-561-337-00 CONNECTOR, MULTI TAI5 *1-561-337-00 CONNECTOR, MULTI ************************************	<connector></connector>	11 *1-564-431-11 POST, CONNECTOR 12 *1-564-431-11 POST, CONNECTOR 11 1-561-724-00 SOCKET, CONNECTOR 12 1-561-724-00 SOCKET, CONNECTOR 13 *1-566-054-11 PIN, CONNECTOR 14 *1-566-054-11 PIN, CONNECTOR 15 *1-566-054-11 PIN, CONNECTOR 15 *1-566-054-11 PIN, CONNECTOR 15 *1-566-054-11 PIN, CONNECTOR 16 *1-566-054-11 PIN, CONNECTOR 17 *1-566-054-11 PIN, CONNECTOR 18 *1-566-054-11 PIN, CONNECTOR 17 *1-566-056-11 PIN, CONNECTOR	TBIO *1-566-064-11 PIN, CONNECTOR 12P TBI1 *1-566-055-11 PIN, CONNECTOR 3P TBI2 *1-566-064-11 PIN, CONNECTOR 12P TBI3 *1-566-062-11 PIN, CONNECTOR 10P
Œ	]					TSI STR	AS JAOIRTOSE 7			

The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

Les composants identifies par une trame et une marque Sont critiques pour la securite.

Neles remplacer que par une piece portant le numero specifie.

REMARK ≥

CONNECTOR ASSY, MICRO 5P (BVM-2811 ONLY)
ITC ASSY (BVM-2011 ONLY)
ITC ASSY (BVM-2811 ONLY)
ITC ASSY (BVM-2811 ONLY)
ITC ASSY (BVM-3011P ONLY) DESCRIPTION 1-941-802-01 8-738-451-70 8-738-456-75 8-738-451-75

REMARK REF.NO. PART NO.

DESCRIPTION

REF.NO. PART NO.

•	. V901 <u>A.</u> 8 A. 8 A. 8												
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	1/40 1/40 1/40 1/40 1/40	1/4W 1/4W 1/4W 1/4W	:******	10% 10%	1/4W 1/4W 1/4W	** ** ** **			# # # # # #	* * * * *	(A) (B) (B)	(NX- 3D) 3D) 3D)	-2811 -2811 -2811 -2811 3) 12p
	<b>MMMMM</b>	2225 2225 2225 2225 2225 2225 2225 222	*****		26%	* * * * * * * * * * * * * * * * * * *		CRO 2P	** # # *	** ** ** **		FLYBACK K (HB-20) VM-2811 POWERT	N (BVM- N (BVM- N (BVM- N) TYPI
	100 100 100 100 100	100 100 100	**************************************	0.01MF	75 75 75	**************************************	G124A	R ASSY, MI	######################################	* * * * * * * * * * * * * * * * * * *	ASSY, HIGH-VO R, SWITCHING ( NDING CORRECTI NDING CORRECTI MAGNETIZATION	TRANSFORMER ASSY. F HIGH VOLLAGE BLOCK CONNECTOR, BNC 1P CONNECTOR, BNC (BVM SWITCH, PUSH (AC PD)	INIATURE PIN IINIATURE PIN IINIATURE PIN IR ASSY (ROUND
15108>	4	CARBON CARBON CARBON CARBON	##****** W BOARD #*****	ACITOR> MYLAR MYLAR	ISTOR> METAL METAL METAL	******* Y BOARD, ******	)E> DIODE TL	CONNECTOR> 15 CONNECTO	******* Z BOARD, *******	******** CELLANEOUS	RESISTOR ASSY, REGULATOR, SWIT COIL, LANDING COIL, LANDING COIL, DEWACHET	TRANSFOR HIGH-VOL CONNECTO CONNECTO	CABLE, MII CABLE, MII CABLE, MII CABLE, MII CONNECTOR
288>	1-249-405-11 1-249-405-11 1-249-405-11 1-249-405-11 1-249-405-11	1-249-405-11 1-249-405-11 1-249-405-11 1-249-405-11	**************************************	<cap. 1-108-692-11 1-108-692-11</cap. 	<res: 1-214-702-00 1-214-702-00 1-214-702-00</res: 	**************************************	<01000 8-719-812-43	CCGN) CCGN)	**************************************	:*** SIW	A.1-237-165-13 A.1-413-682-11 1-426-292-11 1-426-293-11 A.1-426-294-11	As 1-439-382-21 As 1-453-103-51 1-565-791-11 1-569-711-11 As 1-571-877-12	*1-590-367-11 *1-590-367-21 *1-590-367-31 *1-590-367-41 I-941-422-15
	E E E E E E E E E E E E E E E E E E E	R6 R8 R9	# # #	55	R1 R3	* * * *	11	TB7	** ** **	* * * *			

▲および ‱‱ 印の部品は,安全性を維持する ために,重要な部品です。従って交換時は,必 ず指定の部品を使用して下さい。

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